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### EXPANDING THE EVIDENCE BASE FOR THE DESIGN OF POLICY INFLUENCING CONSUMER CHOICE FOR PRODUCTS AND SERVICES WITH ENVIRONMENTAL IMPACTS

## Final Report

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In association with



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Industrial Ecology - Nutritional Health

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## 1. EXECUTIVE SUMMARY

This document serves as the final report for the study on “Expanding the Evidence Base for the Design of Policy Influencing Consumer Choice for Products and Services with Environmental Impacts” launched by the European Commission – DG Environment and carried out by BIO Intelligence Service, PSI and Ecologic.

### 1.1. STUDY OBJECTIVES

The principal objective of this study was to stimulate future research and investigation of consumer response to policy in order to inform future policy development. In order to design effective policy to influence consumer choice, policy makers must understand how consumers make their purchasing decisions in real life situations. The study aimed to identify and communicate to a wide audience the information needed by policy makers to develop more efficient consumer demand policy. This was done by building upon the existing evidence base to collect more detailed existing information on aspects of consumer motivations and behaviours and highlight the further research work needed and propose how to do this work effectively.

### 1.2. APPROACH & METHODOLOGY

In order to stimulate future research and investigation of consumer response to policies promoting the purchase of environmentally-friendly goods, hypotheses have been developed to investigate how consumers, particularly pertaining to behavioural economics, respond to specific policy tools (e.g. labels, information provision, and financial instruments). Based on these hypotheses, experiments or ‘research trials’ can be designed to test the hypotheses on real world consumers. Research trials can be designed and used by a wide range of actors from retailers, researchers, consumer associations, and in particular policymakers. The experiments are also applicable for a wide range of products and services such as energy-using products, cars, green electricity, and food products. Evaluation methodologies and a framework are also proposed to help policymakers use policy implementation as a means to generate and collect data to better develop future policy. The chapters of this report are structured into the following sections:

- Development of hypotheses of consumer response
- Deeper investigation into the nature of key drivers of consumer decision
- Evaluation of policy instruments to influence consumer behaviour
- Design of experiments to provide information on drivers of consumer response
- Illustrative research trial

### 1.3. DEVELOPMENT OF HYPOTHESES OF CONSUMER RESPONSE

Existing knowledge on consumer behaviour has provided the basis for developing hypotheses and uncertainties concerning consumer choice. Key information that was gathered in the section to better understand consumer behaviour included:

- Drivers of consumer behaviour
- Implications of consumer segmentation
- Policy tools that are used to influence consumer behaviour
- Implications for research priorities

#### ■ Drivers of consumer behaviour

Many factors influence the consumer decision-making process. Understanding the drivers of consumer behaviour can also provide important insights into how to better design policy to influence consumer choice. Behavioural economics, which uses social, cognitive and emotional factors to understand the economic decisions of consumers, explains that consumers are strongly influenced by emotions, habits, and by the behaviour of the people around them. Data collected from several literature sources have identified some of the following drivers of consumer behaviour:

- The presentation and framing of information: the way in which information, including prices, is framed and the decision-making context and environment can have a substantial impact on the choices made by individuals.
- Product differentiation: *Comparability* is one of consumers' most important demands. Consumers want simple and meaningful comparisons.
- The influence of endorsement: Endorsements from well known and respected organisations are highly valued by consumers.
- Brand recognition: Consumer choice is frequently driven by recognition of products, brands, or labels.
- Social influence: People want to feel their behaviour is normal and thus subscribe to descriptive norms – i.e., they react in the same way as the people around them.

#### ■ Consumer segmentation

Consumers do not all think alike and are influenced by factors such as their religion, gender, age, socio-economic group, education, etc. Consumer segmentation is an approach often used in the marketing world to target different audiences, as different groups of consumers are motivated in different ways and should be communicated to differently.

#### ■ Policy tools to influence consumer choice

At the policy making level, consumer policy provides market and policy tools to empower citizens, as consumers, to make sustainable environmental choices. Specific policy instruments that can be used to influence consumer choice include:

- Financial instruments: taxes, incentives, subsidies, Bonus-Malus

- Labels: endorsement and comparison labels
- Other information provision tools: websites and printed materials, awareness campaigns, advertising, and peer-to-peer web community sites.

#### ■ Formation of hypotheses

A set of 14 hypotheses have been developed based on understanding of some important drivers of consumer behaviour and consumer responses to different forms of consumer demand policy. Some examples of the hypothesis include for example:

- A product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.
- Framing effects that present the lifetime cost of using non-energy saving products will prompt increased purchasing of energy-saving products compared to presenting information on the lifetime savings of energy saving products.

## 1.4. EVALUATION OF POLICY INSTRUMENTS TO INFLUENCE CONSUMER BEHAVIOUR

Policy evaluation can contribute to the better understanding of consumer behaviour, for example, by not only assessing the outcome of certain policies but rather looking at the drivers for specific behaviour responses. Evaluation techniques are beneficial both prior to the implementation of policies (ex-ante) where they can contribute to the design of the evaluation schemes, and for analysis of existing policies (ex-post).

Evaluation steps proposed include:

- Linking measures to policy: In a first step, it is essential to recognise that consumer policies at the EU-level or at the national level are not sufficiently specific to enable a direct evaluation of the impact of the policy on consumer behaviour.
- Linking measures to consumer behaviour: Once all the measures of a policy have been identified, it is possible to plan the evaluation on a per-measure basis. A set of research questions or hypotheses which articulate the predicted consumer responses to each measure should be developed. The main challenge is thus to determine which factors are relevant to which measure.
- Understand possible outcomes: different measures in different policy areas will entail different outcomes. It is essential to understand the potential outcome of a measure in order to find the correct data to assess its impact.
- Examine how to make use of all evaluation results and derive ex-ante predictions about the likely outcome of certain measures; a complex EU-level database could be set up to collect the data and allow for information sharing and more informed consumer policy-making:



- The database could be used for multiple purposes. The main use will be to promote evaluation of consumer policy measures and to foster the use of common standards and methodologies for these evaluations.
- Once this data pool is structured, it will become essential to encourage evaluation activities on consumer policy measures, which will thus be the relevant next step.
- Finally, after a primary set of evaluation data has been collected, research into transfers and transfer errors to estimate, ex-ante, the net outcome of measures can begin..

## 1.5. DESIGN OF EXPERIMENTS TO PROVIDE INFORMATION ON DRIVERS OF CONSUMER RESPONSE

This section provides guidance on designing experiments to provide information on consumer response. It seeks to raise awareness about how behavioural and social sciences can contribute to policies by providing better understanding of consumer behaviour. The stages involved, from the research to the policy process, are introduced below.

1. **Real world issue characterisation.** This involves exploring the issue in question and characterising it from a real world perspective.
2. **Understanding the issue from a real world perspective.** This involves using the existing evidence base and possibly initial data gathered to understand the issue within a real world perspective.
3. **Hypothesis development.** When developing a hypothesis, it should be possible to use an objective method to test it.
4. **Hypothesis testing** including a pilot study. The hypothesis needs to be tested within a research trial.
5. **Implementation / piloting.** If the results of the experiment suggest that the policy would be enhanced by adopting behavioural elements, the policy might be developed based on this.
6. **Review and revision.** In light of the information gained through the policy implementation or piloting, the design of the policy can be reviewed and refined.

### ■ Methods used within consumer research

Research methods vary greatly depending on which stage of the research process they are to be used. Typically, methods which seek to gain information from consumers will be used to characterise possible challenges and develop hypotheses of behaviour (i.e. stages 1 & 3 as introduced above). Experimental methods will be used to test hypotheses and pilot measures already implemented (i.e. stages 4 & 5 above). Research methods to directly obtain information from consumers are often used in the developmental stage of the

research process in order to develop an understanding of the context and formulate a hypothesis, and include:

- Qualitative Methods
- Observational and Verification Methods
- Quantitative Surveys
- Behavioural experiments

In particular for the case of behavioural experiences, experimental economics is the application of experimental methods to test the validity of economic theories and test-bed new market mechanisms. Experiments have been categorised broadly into the following four categories:

1. Laboratory experiments
2. Artefactual field experiments
3. Framed field experiments
4. Natural field experiments

#### ■ Concepts to Consider

When designing any research trial or attempting to measure the impact of an intervention on consumer behaviour, there are a number of important key concepts to consider. Some of these include:

- The counterfactual: the outcome that would have occurred had the intervention not been implemented.
- Sampling frame: the extent to which research is reliable and able to be generalised is heavily determined by the people (or 'subjects') that are the focus of the research itself.

The precise research method that is used to explore consumer behaviour, as well as other details relating to the way in which the development of a policy proceeds, will be determined by existing evidence in the area, together with the resources available to the parties carrying out the research.

## 1.6. ILLUSTRATIVE RESEARCH TRIAL

The last chapter of the project describes how two hypotheses were selected and tested as part of a research trial carried out during the study.

#### ■ Development of the trial methodology and selection of hypotheses to test

The trial methodology is presented in detail in the Annex of the main report. The methodology managed to respond to the following two major sources of potential biases:

- How to provide real market incentives?

- How to control for measurement bias?

The hypotheses that were selected for testing included:

- A product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP; and
- Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.

The rationale for selection of these hypotheses is provided in Section 6.3. The research trial tested the impact of other consumer's behaviour within the main body of the experiment and that the impact of anchoring (i.e. reference to RRP) within the choice of prize draw to be entered into (after the experiment as part of the incentive). The remainder of the details of how the research trial was developed is provided in the Annex.

### ■ Research trial results

The following reasons might explain the failure to prove any of the hypotheses tested:

1. **The sample sizes were insufficient.** This will always be the case as larger samples will always point towards greater levels of significance.
2. **The artificial nature of the trial led to poor consideration by the respondents.** This represents the main weakness when using a laboratory based trial. The respondents may not fully behave as they would have done in a real purchasing context.

## 1.7. CONCLUSIONS

This study has presented the key drivers of consumer behaviour and identified a number of uncertainties about consumer behaviour that merit further research. Research priorities include:

- Consumer segmentation models across the EU: understanding the different groups of consumers, future trends in the evolution of the EU population and demographics, and how they would react to specific instruments is key. However, it is currently uncertain whether such models can be applied at the EU level.
- The effects of displaying price: consumer policy instruments often involve the use of financial instruments such as taxes and subsidies. The way in which a price change due to government intervention is displayed to consumers is important and can determine the effectiveness of the policy.
- Consumer behaviour in relation to specific products: depending on the type of product in question (e.g. vehicles, energy using products, food, cosmetics, clothing, etc.), hence different types of policies may be more effective.

In terms of designing and carrying out consumer behaviour experiments, careful planning is needed in order to get data needed for meaningful results, however tests and

experiments are not always definitive – especially in laboratory settings where consumers are tested *outside* a real world setting and using larger test samples can help to obtain more robust conclusions.

Key barriers to more effective and widespread research into consumer choice in EU MS include:

1. Incorporating consumer behaviour into decision-making is not common practice for policy-makers, who do not always make the link between priority environmental issues and consumer behaviour.
2. Interdisciplinary research programmes are not common practice among universities and institutions, as research tends to focus on one specific area (such as transport or energy).
3. Retailer-academic collaboration is rare, and there may be barriers to overcome in terms of sharing of commercially sensitive findings.

Overcoming the above barriers will be critical in achieving more effective and widespread research in consumer behaviour. One way to overcome such barriers is to set up funding requirements that promote more interdisciplinary research and include actors in the commercial and marketing fields.

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## 2. DEVELOPMENT OF HYPOTHESES OF CONSUMER RESPONSE

This chapter reviews the existing knowledge of consumer behaviour to formulate hypotheses to guide policy makers on how to design policy more efficiently, based on the main drivers behind consumer choice. The following chapter analyses the current evidence on consumer behaviour to determine consumer response to specific forms of policy instruments, and begins to identify the most important questions on consumer behaviour for which further research is needed.

The project team worked previously on the study: *Designing policy to influence consumers: Consumer behaviour relating to the purchasing of environmentally preferable goods Behaviour* (henceforth referred to as the Real World study). This experience, as well as an additional targeted literature review provides the basis for analysis on existing knowledge on consumer choice and the influence of policy instruments. A complete and wide array of sources were used to support the hypotheses on consumer-orientated policy.

The Real World study reviewed a considerable amount of consumer and marketing sources that gives significant insight into the influences that are known to affect consumer choice, particularly related to policy interventions, specific product groups, and the context in which consumers make their purchasing decisions. Observations and analysis were based on existing knowledge from behavioural economics and marketing on the drivers of consumer choice, together with additional research where there are known to be gaps. Therefore, this chapter is organised into 3 principal sections:

- Analysis of existing knowledge on consumer choice and additional literature review
- Formation of hypotheses
- List of uncertainties

### 2.1. ANALYSIS OF EXISTING KNOWLEDGE ON CONSUMER CHOICE AND ADDITIONAL LITERATURE REVIEW

This section analyses existing knowledge on consumer behaviour, which provides the basis for developing hypotheses and uncertainties underlying the hypotheses. In order to effective design effective policy to influence consumer choice, policy makers must understand how consumers make their purchasing decisions in real life situations. Sections here include an overview of the drivers of consumer behaviour, the importance of studying consumer segmentation, and the different possible policy tools that can be used to influence consumer behaviour. All of these factors are used to help develop the hypotheses in section 2.2.

### 2.1.1. DRIVERS OF CONSUMER BEHAVIOUR

Many factors influence the consumer decision-making process. Understanding the drivers of consumer behaviour can also provide important insights into how to better design policy to influence consumer choice. Behavioural economics, which uses social, cognitive and emotional factors to understand the economic decisions of consumers, explains that consumers are strongly influenced by emotions, habits, and by the behaviour of the people around them.

Consumer preferences evolve and change over time according to the situation and the way in which information is presented. Another important aspect about consumer behaviour to understand is that consumers are heterogeneous and purchase products for different reasons. Data collected from several literature sources, as well the Real World Study have identified some of the following drivers of consumer behaviour:

#### ■ The presentation and framing of information

Traditional economics assumes that the way in which information is presented to consumers, or the context in which the information is interpreted, has little effect on consumer decision-making. However, evidence from behavioural economics has proven that both the way in which information, including prices, is framed and the decision-making context and environment can have a substantial impact on the choices made by individuals. For example, framing information in terms of costs or losses can have a greater impact on consumer choice than the same information presented in terms of benefits or gains. Similarly, studies have shown that ‘hidden’ taxes tend to be much more popular to consumers than other taxes, thanks to a decision-making bias known as the ‘identifiability effect’. This states, for example, that consumers are more accepting of value-added (or sales) taxes that are concealed within the prices of products, than more direct taxes which have a more salient, identifiable cost attached<sup>1</sup>.

When evaluating choices, “anchoring and adjustment” is often used to estimate the unknown value of something<sup>2</sup>. Consumers associate a certain set price for products and use this number as an anchor to compare the current and future prices for similar products. For example, if a recommended retail price (RRP) for a product is placed alongside the actual (cheaper) sale price, consumers will anchor to the RRP, and judge the sale price to be good value.

#### ■ Product differentiation

The influence of the difference between products is important to consumers. Consumer surveys have shown that one of the determining factors of selecting certain products over others is the perceived “performance” of the product<sup>3</sup>. To be able to distinguish between products, consumers must be able to compare them. The literature review has shown that

<sup>1</sup> Riedl, A. (2010) Behavioural and experimental economics do inform public policy. [CESifo Working Paper Series No. 2902](#); Chetty, R. *et al.* (2008) Salience and taxation: theory and evidence. Working Paper 13330. <http://www.nber.org/papers/w13330>

<sup>2</sup> PSI, BIO, Ecologic (2009), Real World Consumer Behaviour Towards Purchasing Environmentally-Friendly Goods and Services. Report for the European Commission, Report for DG Environment

<sup>3</sup> TerraChoice Environmental Marketing (2009), EcoMarkets 2009 Summary Report

*comparability* is one of consumers' most important demands. Consumers want simple and meaningful comparisons. Indeed, as one study indicates, the general proliferation of labelling schemes and comparisons that are not well understood (e.g. grams of CO<sub>2</sub>/km on car ads) offer little or even undermine the relevance and usefulness of a green claim (i.e. the marketing as products and services as "green" or less damaging for the environment)<sup>4</sup>. In addition, as the number of products and environmental labels increases, the amount of information may not help the ability of consumers to make effective comparisons between products and ceases to provide them with any useful means of differentiation. Therefore, it is important that products and services with information labels achieve improved environmental standards as well as deliver on cost and performance.

### ■ The influence of endorsement

Endorsements from well known and respected organisations are highly valued by consumers. For example, some research has shown that simple seal-of-approval logos and labels have generally affected consumer behaviour more than the complex information-disclosure labels.<sup>5</sup> Government endorsement can often bring credibility to a label even in countries with historic bureaucratic problems. This is important as results confirm a tension between the credibility versus the appeal of label designs with technical looking labels make viewers feel confident in the labels authority, but detracting from making the label an eye-catching tool<sup>6</sup>. Celebrity endorsements are also known to be effective in influencing consumers to purchase certain products and services. In a recent consumer survey, 58% of consumers thought an advert endorsed by an environmental organisation was something that would make them confident in a green claims made by a company<sup>7</sup>.

### ■ Brand recognition

Consumer choice is frequently driven by recognition of products, brands, or labels. Research studies have proven that known products and names are sold more than unknown ones. Therefore, a known brand will find more recognition and buyers in the market in comparison to less known or exposed brands. It is also important to consider that certain brands may appeal to different people and are therefore closely associated with issues of identity and norms. Oftentimes, it suffices that consumers recognise the label to purchase the product, as opposed to buying the product based on the information conveyed<sup>8</sup>.

### ■ Social influence

A recent study analysed consumer choice of green electricity, and found that people are willing to pay more for green electricity, but only on the condition that others are partaking in similar actions. People want to feel their behaviour is normal and thus subscribe to descriptive norms – i.e., they react in the same way as the people around them. This

<sup>4</sup> Yates Lucy (2009), Understanding Green Claims in Advertising, Consumer Focus Report

<sup>5</sup> Banerjee Abhijit et al., (2003), Eco-labeling for energy efficiency and sustainability: a meta-evaluation of US programs, Energy Policy 31 (2003) 109–123

<sup>6</sup> Egan, Christine and Paul Waide (2005): Evaluation of Labelling Research, 2005. CLASP and IEA report.

<sup>7</sup> Yates Lucy (2009), Understanding Green Claims in Advertising, Consumer Focus Report

<sup>8</sup> PSI, BIO, Ecologic (2009): Real World Consumer Behaviour Towards Purchasing Environmentally-Friendly Goods and Services. Report for the European Commission, Report for DG Environment



behaviour is similar to herd mentality, which describes how people are influenced by their peers to adopt certain behaviours, follow trends, and/or purchase items. This corresponds to one of the main drivers of consumer behaviour – the influence of the behaviours of others<sup>9</sup>. One study suggests that the best strategy to change consumer behaviour is to use information to allow individuals to feel that they are acting as part of a community which reciprocates and endorses their action, rather than on an individual basis. To get people to act in an information-rich world requires that people see that others are acting<sup>10</sup>.

## 2.1.2. CONSUMER SEGMENTATION

Consumers do not all think alike and are influenced by factors such as their religion, gender, age, socio-economic group, education, etc. Research shows that the relative income level of consumers, in relation to the product pricing is influential to consumers' purchasing decision. In the example of sustainable energy use (including purchase) in residential buildings, Brohmann et al. (2009) explains that purchasing green electricity is significantly influenced by income. For example, the study indicates that higher income is positively related with energy-saving activities/expenditures. Therefore, richer households are more likely to invest in energy efficiency. In addition, due to a higher turnover rate for household appliances, there is a greater chance for energy-efficient appliances to replace older, less energy-efficient appliances. Some study findings also indicated that social factors such as higher levels of education are associated with greater energy-saving activities<sup>11</sup>.

In addition, consumer acceptance of ecolabelled products is likely to differ across product classes, demographics, and consumer preferences<sup>12</sup>. For example, a study on the influence of food labels indicates that older consumers are likely to process less information than younger consumers (relying on greater market experience). With reference to gender and education effects, the study shows that women are more likely to use food labels and that higher education levels lead to increasing levels of information searching, as consumers with a high level of education are more capable of interpreting the information provided on nutrition labels<sup>13</sup>.

According to another recent study, differences in consumer demand for environmental information is strongest in relation to food, white goods and household cleaning products – 74%, 73% and 67% of consumers classified as highly environmentally receptive say they “always” or “often” look out for information on environmental performance in relation to these product areas<sup>14</sup>.

<sup>9</sup> Brohmann, Bettina et al. (2009), What's Driving Sustainable Energy Consumption? A Survey of the Empirical Literature, Discussion Paper No. 09-013 for the Centre for European Economic Research (ZEW)

<sup>10</sup> Consumers International, Accountability (2007), What Assures Consumers on Climate Change?

<sup>11</sup> Brohmann, Bettina et al. (2009), What's Driving Sustainable Energy Consumption? A Survey of the Empirical Literature, Discussion Paper No. 09-013 for the Centre for European Economic Research (ZEW)

<sup>12</sup> Johnston, Robert J. et al. (2001), Measuring Consumer Preferences for Ecolabeled Seafood: An International Comparison

<sup>13</sup> Stefanella Stranieri, Lucia Baldi and Alessandro Banterle (2009), Do Nutrition Claims Matter to Consumers? in Journal of Agricultural Economics

<sup>14</sup> Yates Lucy (2009), Understanding Green Claims in Advertising, Consumer Focus Report

Consumer segmentation is an approach often used in the marketing world to target different audiences, as different groups of consumers are motivated in different ways and should be communicated to differently. Consumer segmentation can also be useful in policy. For example, in England, the Department of the Environment, Food and Rural Affairs (Defra), together with other government departments, have developed a segmentation model to inform its ongoing work encouraging pro-environmental behaviours. Defra's environmental segmentation model divides the public into seven clusters, such as "positive greens", "sideline supporters" and "waste watchers". Each segment has is characterised by a detailed profile that covers ecological worldview, socio-geo-demographics, lifestyle, attitudes towards behaviours and current behaviours, motivations and barriers, and knowledge and engagement<sup>15</sup>. The model also identifies specific policy measures that correspond to the attitudes and behaviours of the specific population segment based on main principal behavioural changes by enabling, engaging, encouraging and exemplifying consumers (see Figure 1). Table 3 demonstrates how the different population segments are defined in terms of willingness to act and the main emphasis for policy intervention.

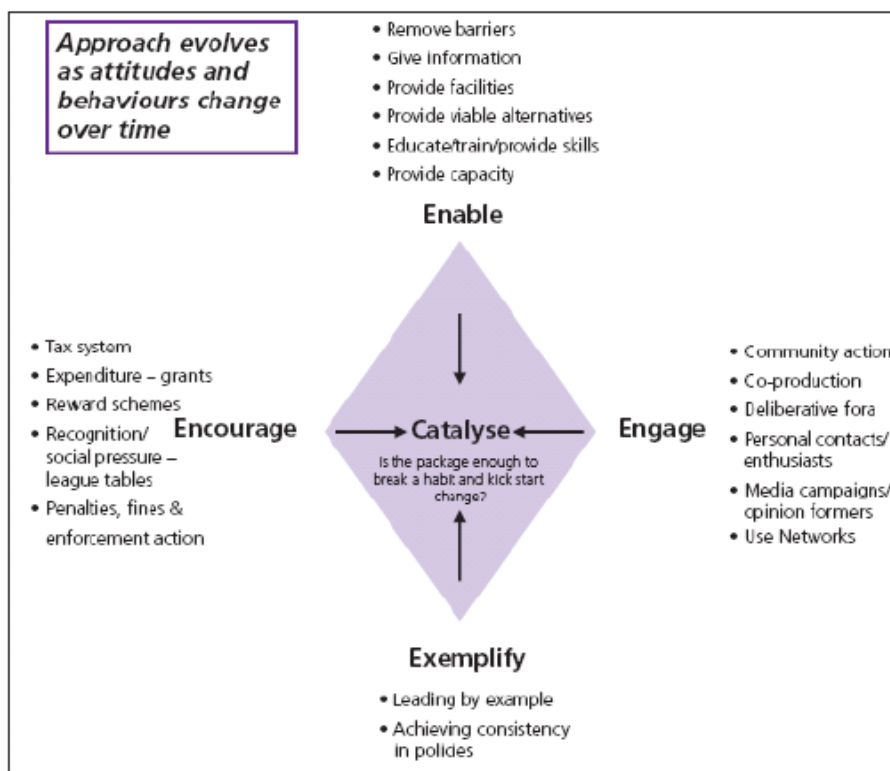
**Table 1: Defra's environmental segmentation model<sup>16</sup>**

| Consumer type         | Willingness to act           | Percentage of the English population | Main emphasis for policy intervention |
|-----------------------|------------------------------|--------------------------------------|---------------------------------------|
| Positive greens       | Very high willingness to act | 18 % of the population (7.6 million) | Enable, Engage                        |
| Waste watchers        | Low willingness to act       | 12% of the population (5.1 million)  | Encourage, Exemplify, Enable          |
| Concerned consumers   | High willingness to act      | 14% of the population (5.7 million)  | Enable, Engage                        |
| Sideline supporters   | High willingness to act      | 14% of the population (5.6 million)  | Enable, Engage                        |
| Cautious participants | Medium willingness to act    | 14% of the population (5.6 million)  | Encourage, Enable                     |
| Stalled starters      | Low willingness to act       | 10 % of the population (4.1 million) | Encourage, Exemplify, Enable          |
| Honestly              | Very low                     | 18% of the                           | Encourage, Enable                     |

<sup>15</sup> Defra (2008), A Framework for Pro-Environmental Behaviours

<sup>16</sup> Defra (2008), A Framework for Pro-Environmental Behaviours

| Consumer type | Willingness to act | Percentage of the English population | Main emphasis for policy intervention |
|---------------|--------------------|--------------------------------------|---------------------------------------|
| disengaged    | willingness to act | population (7.4 million)             |                                       |



**Figure 1: Diagrammatic representation of the 4E's model<sup>17</sup>**

Figure 2 shows another example of a consumer segmentation model that was developed by The UK Climate Group, in Association with Sky and Lippincott. Their research compared US and UK consumers according to six segments, and proposed the most efficient approaches to engage them in sustainable behaviour<sup>18</sup>.

<sup>17</sup> Defra (2008), A Framework for Pro-Environmental Behaviours

<sup>18</sup> WBCSD (2009), Sustainable Consumption

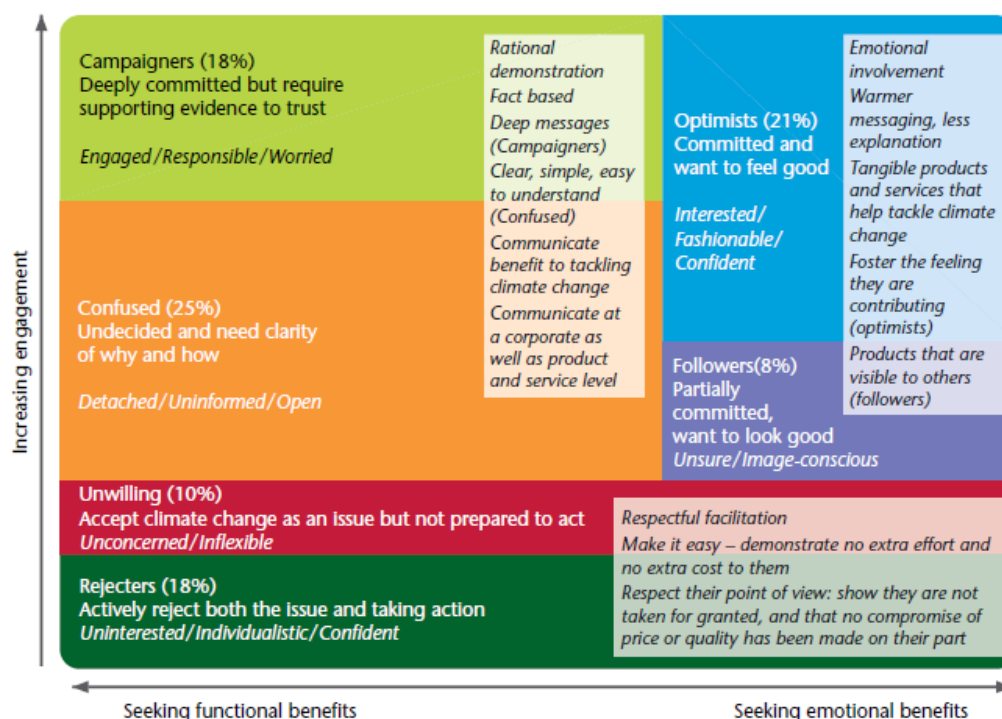


Figure 2: Consumer segmentation model<sup>19</sup>

Figure 3 shows the results of a survey taken by sustainability experts (working in both private and public sectors, as well as in the media) that aimed to determine what factors prevented consumers from paying more for the environmental performance of products. The figure shows that the factors believed to be the most important barriers to increased willingness to pay for the full costs of the ecosystem services that society uses include: lack of understanding; selfishness; and associated costs and taxes<sup>20</sup>. The fourth factor, “tragedy of the commons”, refers to the tendency of consumers to be more willing to act if they see others behaving well. In others, it reflects an “I will if you will” mentality which supports the idea that consumers are very much influenced by the behaviour or those around them.

<sup>19</sup> WBCSD (2009), Sustainable Consumption

<sup>20</sup> National Geographic Society/GlobeScan, Greendex (2008), Consumer Choice and the Environment – A Worldwide Tracking Survey



**Figure 3: Why consumers are sometimes unwilling to pay more for environmental performance<sup>21</sup>**

Evidence suggests that consumer responses to policy and judgements during decision-making not only differ according to socio-economic differences or attitudes but to more fundamental cultural differences within and between different populations. The term 'cultural cognition' has been used to describe the way in which decision-making strategies and preferences, such as food choice, are culturally transmitted<sup>22</sup>.

It is therefore important to develop specific strategies and policy tools that not only target the entire population but also specific segments of it. Policy makers may find that some policy instruments work better for some groups of population, while other instruments work better for other segments of the population.

### 2.1.3. CONSUMER PERCEPTION OF SUSTAINABLE BEHAVIOUR

Consumers International, Consumer Focus, and TerraChoice Marketing are well known consumer and marketing organisations, who all recently conducted consumer surveys to determine what sources of environmental information consumers trust most, what they consider to be the most important environmental issues, and consumer actions to combat these issues.

Consumers International conducted a consumer survey of 2 734 people in the US and the UK during 2007. Consumer Focus organised focus groups, which included four large focus groups, with 100 consumers. An online survey was also conducted, which involved a

<sup>21</sup> National Geographic Society/GlobeScan, Greendex (2008), Consumer Choice and the Environment – A Worldwide Tracking Survey

<sup>22</sup> Sunstein, C. (2007) On the divergent American reactions to terrorism and climate change. Columbia Law Review 107. 503 – 557.

representative sample of 1,040 adults aged 18 to 65 in Great Britain in March 2009. Finally, TerraChoice conducted a consumer survey that was completed by 587 professional purchasers in the United States and Canada between April and July 2009.

The findings of these consumer surveys provides important insights into how policy tools such as labels and other information provision tools may be improved and designed to reflect real consumer demands. One study's results indicate that endorsement from scientists' environmental groups and friends and family are among the most trusted sources of environmental information. Government, business, the media and celebrities all feature low in the trust list<sup>23</sup>. Figure 4 also indicates that third party endorsement from an environmental organisation (such as WWF or Greenpeace) enable consumers to be have more confidence in green claims, followed closely by the backing of an independent study, a common label for comparison, and ads from company they trust. In contrast, direct endorsement from Government and additional details provided as a footnote is seen as a second level of consideration<sup>24</sup>.

Results from both studies highlight more consumer trust in endorsements from environmental groups and scientists over government and celebrities.

In terms of the environmental issues consumers feel are most important, professional purchasers ranked "human health", "energy conservation", "toxics", "recyclability", and "recycled content" as the top five most important environmental issues<sup>25</sup>. Figure 5 indicates that consumers think reducing energy consumption/changing light bulbs, recycling, and using more public transportation are the most important actions they can do to contribute to sustainability. According to the specific actions recommended by WWF, key consumer actions that can significantly improve personal carbon footprints include buying a fuel efficient car, buying renewable energy, using low energy light bulbs, using energy efficient appliances, home insulation and double-glazing, low-flow shower heads and driving less<sup>26</sup>. Therefore, according to survey results, only about 13% of people identified actions from this "experts" list.

<sup>23</sup> Consumers International (2007), What assures Consumers on Climate Change ?

<sup>24</sup> Yates Lucy (2009), Understanding Green Claims in Advertising, Consumer Focus Report

<sup>25</sup> TerraChoice Environmental Marketing (2009), EcoMarkets Summary Report

<sup>26</sup> Consumers International (2007), What assures Consumers on Climate Change ?

An advert...

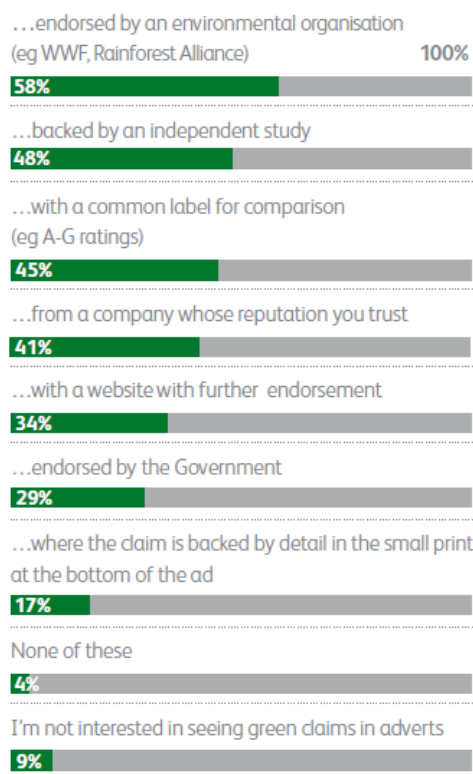


Figure 4: Thinking about what would make you confident in a green claim made by a company, which, if any, of the following would you personally need to see?<sup>27</sup>

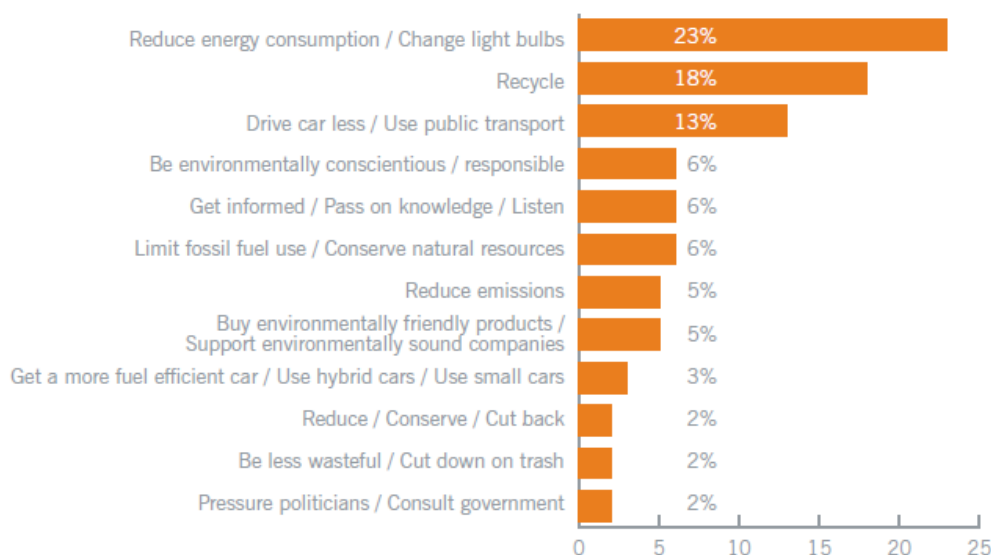


Figure 5: What is the most important thing you can do as a consumer?<sup>28</sup>

<sup>27</sup> Yates Lucy (2009), Understanding Green Claims in Advertising, Consumer Focus Report

<sup>28</sup> Consumers International (2007), What assures Consumers on Climate Change ?

## 2.1.4. USING POLICY TOOLS TO INFLUENCE CONSUMER CHOICE

At the policy making level, consumer policy provides market and policy tools to empower citizens, as consumers, to make sustainable environmental choices. Consumer policy thus includes a number of tools such as financial incentives and disincentives, product and service labels, information provision, and a combination of these measures to better inform consumers on their purchase decision.

In particular, an important role of governments is that of “choice editing,” which refers to governments’ roles in encouraging good choices while discouraging bad ones, by editing citizens’ options through laws, taxes, subsidies, etc. As Professor Tim Jackson notes, government policies and practices send important signals to consumers about institutional goals and national priorities. Governments indicate in sometimes subtle but powerful ways the kinds of behaviours that are rewarded in society, the kinds of attitudes that are valued, the goals and aspirations that are regarded as appropriate, what success means and the worldview under which consumers are expected to act<sup>29</sup>.

The following section goes into further detail of the specific policy instruments that can be used to influence consumer choice. These include financial instruments, labels, and other information provision tools.

### 2.1.4.1 Financial instruments

Many financial instruments exist that are used by policy makers and businesses - taxes, tax incentives, subsidies, etc. that aim at influencing consumers’ demand and shape their consumption patterns by influencing prices and income levels. Many countries have implemented environmental taxes at different levels, including comprehensive green-tax reforms. Most environmental taxes support the ‘polluter pays principle’, in which costs of pollution prevention and control are reflected in the price and output of goods and services which cause pollution.

#### ■ Taxation to promote environmentally-friendly products

Tax incentives and non-incentives can influence the purchasing power of consumers. The level of taxes directly impacts the final price for different products and therefore also affects the consumption patterns and levels. Some examples of how taxes can be put into place to influence for more sustainable behaviour can be seen in the example of France:

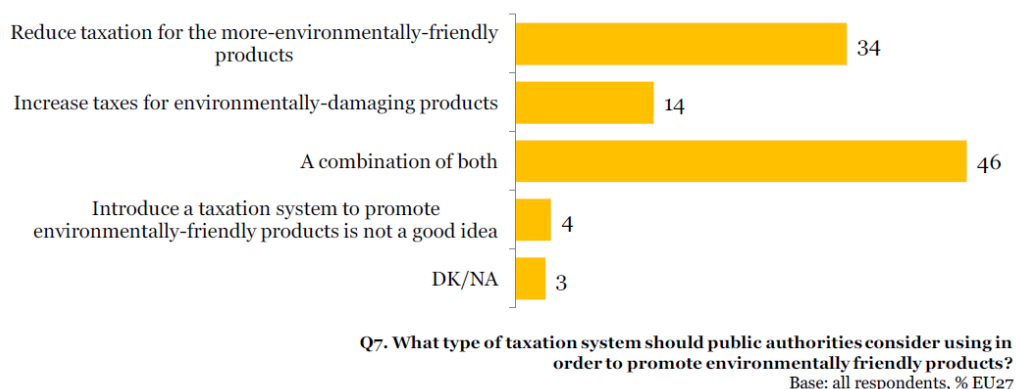
- **Housing:** interest-free loans and loan-interest tax credits for the acquisition of new housing that exceeds thermal energy standards; interest-free “eco-loans” for energy efficient renovation work on existing housing.
- **Energy:** property-tax exemption for buildings equipped with photovoltaic electricity production systems ;
- **Waste:** increase in the General Tax on Polluting Activities (TGAP), calculated on the basis of household waste volumes;

<sup>29</sup> Jackson, Tim (2005), *Motivating Sustainable Consumption*



- **Biodiversity:** TGAP doubled on extracted materials specifically to encourage the use of renewable materials;
- **Agriculture:** accelerated depreciation of investments made by companies engaged in first-stage wood processing; property-tax exemption for undeveloped properties to encourage organic farming ; gradual increase in taxes on pesticides;
- **Industrial risk:** introduction of a new TGAP tax based on quantities of total airborne particles.<sup>30</sup>

A recent Eurobarometer survey looked at European attitudes towards sustainable consumption, which revealed many interesting observations about how Europeans perceive specific policy instruments to promote environmentally-friendly goods. Concerning taxes, the survey showed that almost half (46%) of EU citizens thought that the best taxation system to promote environmentally-friendly products is to reduce taxation on these products, in combination with increasing taxes for the environmentally-damaging products<sup>31</sup>. Only 4% of EU citizens spontaneously said that introducing a taxation system to promote eco-friendly products is not a good idea. Results of the survey question are seen in Figure 6. In addition, in almost all of the EU countries surveyed, people prefer a taxation system that reduces taxes for the more environmentally-friendly products, than a system based on increasing taxes for environmentally-damaging products.



**Figure 6: Best type of taxation system to promote environmentally-friendly products<sup>32</sup>**

#### ■ Bonus-Malus (Reward – Penalty)

The Real World study highlighted the idea that fines may be more effective in influencing consumer choice, but that incentives are preferred by consumers. This is because people feel the loss from a fine more than they value gains from an incentive. The Bonus-Malus taxing system combines both taxes and incentives (i.e. carrot and stick approach) to help shape consumer choice for products.

France introduced the Bonus-Malus scheme for personal cars in 2007 to encourage manufacturers to develop low-emission vehicles by guiding consumer choice. The scheme

<sup>30</sup> Invest in France organisation (2010), The French Tax System: Promoting Competitiveness and Investment, [Available online : [www.invest-in-france.org/Medias/Publications/939/French%20Tax%20System.pdf](http://www.invest-in-france.org/Medias/Publications/939/French%20Tax%20System.pdf)]

<sup>31</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

<sup>32</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

also aimed to speed up the removal from French roads of old polluting vehicles by replacing them with new greener ones. This scheme provides a subsidy to those who purchase a new car that emits less than 130 grams of CO<sub>2</sub> per kilometre, while imposing a penalty on those who buy a new car that emits over 160 g CO<sub>2</sub>/km<sup>33</sup>. The Bonus-Malus mechanism was designed to not be extra burden on households or businesses. Income from the Malus strictly matches the cost of the incentives to buy clean cars and so reduces the number of polluting vehicles on French roads<sup>34</sup>.

### ■ Socio-demographic considerations

In terms of socio-demographic factors, the Eurobarometer survey indicates that a taxation system to promote environmentally-friendly products received support among all socio-demographic groups.

Certain socio-demographic groups including women, respondents under 55 years of age, those with higher levels of education, employees, self-employed respondents and metropolitan residents – were more in favour of a system that combined a tax decrease for environmentally-friendly products and a tax increase for environmentally-damaging products<sup>35</sup>.

### ■ Effective approaches to using financial instruments

A key factor in designing effective financial instruments to influence consumer choice is building acceptance. To do this, countries may need to implement complementary efforts such as identifying simply and clearly the objectives behind an environmentally related tax; disseminating information; and allowing sufficient time for public hearings or other forms of consultation<sup>36</sup>. A consultation period should also be enacted that involves government authorities, concerned industries, other relevant stakeholders, and consumers to ensure that the environmental tax measure is properly understood and accepted. In addition, resources spent to disseminate information on environmentally related taxation can enhance public acceptance.

#### 2.1.4.2 Labels

Labels are often used as a tool within consumer policy to provide the main source of information on a product or service. Environmental labelling includes a number of activities, ranging from business-to-business transfers of product specific environmental information to environmental labelling in retail marketing. One of the principal aims of a successful labelling programme is to influence the consumer, by the environmental information displayed on the label, to purchase products and services with less environmental impacts rather than their more environmentally damaging counterparts. It is often assumed that when individuals make poor choices it is due to misinformation or

<sup>33</sup> OECD (2009), Sustainable Manufacturing and Eco-innovation: Towards a Green Economy Policy Brief, [Available online: [www.oecd.org/dataoecd/34/27/42944011.pdf](http://www.oecd.org/dataoecd/34/27/42944011.pdf)]

<sup>34</sup> Invest in France organisation (2010), The French Tax System: Promoting Competitiveness and Investment, [Available online: [www.invest-in-france.org/Medias/Publications/939/French%20Tax%20System.pdf](http://www.invest-in-france.org/Medias/Publications/939/French%20Tax%20System.pdf)]

<sup>35</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

<sup>36</sup> OECD (2001), Environmentally related taxes: Issues and strategies Policy Briefing [Available online: [www.oecd.org/dataoecd/39/18/2674642.pdf](http://www.oecd.org/dataoecd/39/18/2674642.pdf)]

lack of information. For this reason, and because it is a relatively low cost policy tool, information provision has been the mainstay of consumer-facing product policy. In turn, it has generally been assumed that an excess of information does not harm consumers. Therefore, environmental product labelling or “eco-labelling” is thus an important tool to overcome market failure due to information asymmetries for environmental products<sup>37</sup>.

Literature review identified two main types of labels: endorsement and comparison labels. Endorsement labels indicate that products meet a predetermined standard or eligibility criteria. Products display a logo or mark which identifies they have met the standard or product class and the labels generally contains little or no comparative information. This type of label informs the consumer that the product meets the required standard. These types of labels usually include messages similar to “this product is best-in-class for environmental performance, including energy efficiency” or “this product is recommended by...”<sup>38</sup> Comparative labels allow consumers to form a judgment about the environmental performance such as energy consumption or level of CO<sub>2</sub> emissions, and relative ranking of all products that carry the label. Most comparison labels use a scale with absolutely defined efficiency categories (e.g. 1, 2, 3 or 1 star, 2 stars, 3 stars or A, B, C)<sup>39</sup>. These types of labels usually include messages similar to “this product is more/less efficient on a scale of A+ to G”.

A large range of products are now labelled from household energy appliances, to vehicles and food. A recent study conducted a consumer survey to determine for which products environmental information is sought<sup>40</sup>. Results show that white goods, electronic equipment, and cars are among the top 3 products for which environmental information is sought. However, policy makers and industry should be aware that due to the existence of so many labels, labels often confuse people more than aid them in the decision-making process. For example, people note that some products (particularly food) are already “over-labelled” and additional information presented in this way will not help their decision making; conversely they stress the need for guidance and provision of information, particularly around major purchases such as electronic goods<sup>41</sup>.

In terms of the types of environmental information that consumers want on labels, almost 4 in 10 EU citizens (38%) thought that whether a product can be recycled or reused is the most important information that an environmental label should contain. The second most important piece of information provided on an environmental label is a confirmation that the product comes from environmentally-friendly sources<sup>42</sup>. The results are shown in Figure 7.

<sup>37</sup> Sammer, Katharina and Wüstenhagen, Rolf (2005), The Influence of Eco-Labelling on Consumer Behaviour – Results of a Discrete Choice Analysis; Institute for Economy and the Environment (IWOe-HSG), University of St. Gallen, Switzerland

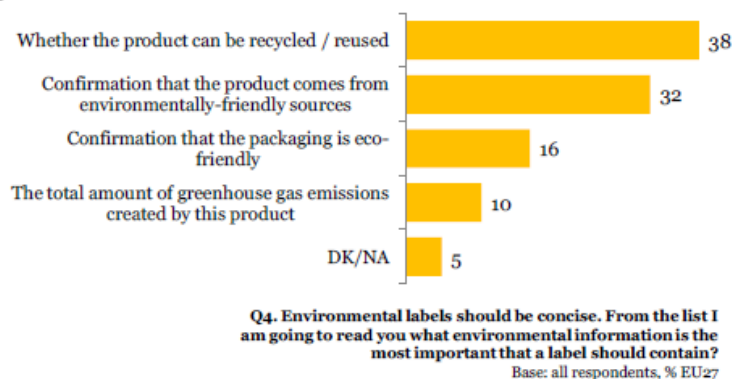
<sup>38</sup> Consumers International (2007), What assures Consumers on Climate Change ?

<sup>39</sup> Harrington, Lloyd (2004), Energy Labelling and Standards Programs Throughout the World, Energy Efficient Strategies, NAEDEC Report 2004/04

<sup>40</sup> TerraChoice Environmental Marketing (2009), EcoMarkets 2009 Summary Report

<sup>41</sup> Policy Studies Institute. 2007. A Synthesis Review of the Public Understanding Research Projects. Report to Defra

<sup>42</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption



**Figure 7: Most important information on environmental labels<sup>43</sup>**

### ■ Socio-demographic considerations

According to the Eurobarometer survey, ecolabelling plays a more important role in purchasing decisions of women, the over 39 year-olds, those with the highest level of education and the self-employed. Conversely, men and younger respondents more frequently said that ecolabels are not important when making purchasing decisions or that they never pay attention to any type of labels<sup>44</sup>. Finally, respondents with lower levels of education, manual workers, non-working respondents and rural residents were more likely than their counterparts to admit that they never read any type of labels when making purchasing decisions, while metropolitan residents and employees were more likely to explicitly state that they do not pay attention to ecolabels<sup>45</sup>.

### ■ Effective labelling approaches

In order for a label that contains environmental information to be effective, end-users need to be able to understand the information that is being conveyed through the label. For example, the US Energy Guide label is a comparative label (with black lettering on a yellow background) in a continuous-scale format that does not use specific scales or numbering. It was determined that consumer understanding of the label is low even though recognition of the label is high<sup>46</sup>. A similar conclusion was found in a recent consumer survey conducted by Consumers International. The consumer survey aimed at determining which types of labels consumers use to inform their decision making choice. The survey finds that while levels of awareness of various labels are generally high (90% for nutrition labels and 76% for energy efficiency labels), levels of consistent use are much lower (32% for nutritional labels and 20% for energy efficiency)<sup>47</sup>.

The EU Energy label is an interesting case study to consider when analysing how a label can positively influence consumer behaviour. Research indicates that there is clear evidence

<sup>43</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

<sup>44</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

<sup>45</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

<sup>46</sup> Thorne, Jennifer and Egan, Christine (2002), An Evaluation of the Federal Trade Commission's Energy Guide Appliance Label: Final Report and Recommendations, prepared for American Council for an Energy Efficient Economy (ACEEE), Washington DC.

<sup>47</sup> Consumers International, Accountability (2007), What Assures Consumers on Climate Change?

that the categorical label design of the EU Energy Label (rating scale of A to G with a corresponding colour code from green to red) has stimulated manufacturers to develop products targeting specific higher efficiency thresholds both in advance of and in response to heightened consumer demand<sup>48</sup>. The EU Energy label underwent extensive study prior to its implementation and has been in place in the EU for 18 years and most likely benefitted from a sort of “brand recognition” due to its 18 years in use. The use of a common label efficiency scale and format for all labelled products is also reported to have aided comprehension and recognition of the EU Energy label. Other research has indicated several ways to make labels more effective:

- Information on labels needs to be grouped, delineated and presented in a hierarchy of importance (e.g. by using font size and reading order to delineate importance). Otherwise, presenting too much information will reduce the labels’ effectiveness.
- Labels that present the efficiency of a product on a comparative scale such as stars, letters or numbers are vastly more preferred and are more easily understood and motivating in terms of influencing consumer choice than those that present technical information only<sup>49</sup>.
- Government endorsement can often bring credibility to a label even in countries with historic bureaucratic problems. This is important as results confirm a tension between the credibility versus the appeal of label designs with technical looking labels make viewers feel confident in the labels authority, but detracting from making the label an eye-catching tool. A well-placed government endorsement can mitigate this impact<sup>50</sup>.
- For long lasting and significant behaviour changes, environmental values need to be developed through education. This should also include developing research, information interpretation and decision making skills. The strength of environmental values needs to be measured to ascertain the success of different levels of value on influencing behaviour<sup>51</sup>.
- Consumers are aware that the cost of running an appliance or vehicle can be more than the initial purchase cost; therefore including this type of information on labels is worth consideration. Several environmental NGO’s recently responded to a questionnaire on the revision of the Energy Labelling Directive. The group states that that rather than the annual cost (which only gives partial information); the

<sup>48</sup> Thorne, Jennifer and Egan, Christine (2002), An Evaluation of the Federal Trade Commission’s Energy Guide Appliance Label: Final Report and Recommendations, prepared for American Council for an Energy Efficient Economy (ACEEE), Washington DC.

<sup>49</sup> Egan, Christine and Paul Waide (2005): Evaluation of Labelling Research, 2005. CLASP and IEA report.

<sup>50</sup> Egan, Christine and Paul Waide (2005): Evaluation of Labelling Research, 2005. CLASP and IEA report.

<sup>51</sup> Young, William et al. (2008), Sustainable consumption: green consumer behaviour when purchasing products; Accepted for publication in Sustainable Development Journal July 2008

global use cost over an average lifetime should be included<sup>52</sup>. For each product group, an average lifetime figure could be set and would be the same for all models in the category. The consumer would be able to quickly assess the average life-cycle cost of the product and compare it to others. An average electricity price could be used and the price should be displayed next to the figure.

#### **2.1.4.3 Other information provision tools**

In addition to labels, other information provision tools can be used to provide environmental information to consumers on products. Such information provision tools include websites and printed materials, awareness campaigns, advertising, and peer-to-peer web community sites.

Websites and printed materials such as leaflets and brochures are often used to convey additional environmental information. This may especially be the case for particularly complex and technical products for which labels provide limited environmental information.

Awareness campaigns are also often launched by different actors to raise awareness about a particular environmental measure or environmental actions to take. Mass awareness raising campaigns have been the first types of approaches to influence consumers to make particular purchasing decisions<sup>53</sup>. Awareness campaigns use a variety of communication tools such as media sources and celebrities. Some recent awareness raising campaigns that aimed at raising consumers' awareness of the environmental impacts of unsustainable consumption patterns include Al Gore's "An Inconvenient Truth" documentary and the UK's "We're in this together" campaign, in which live concerts were given.

Intermediaries, such as sales assistants, can also play a very influential role in the purchasing of products based on certain environmental information. Working with retailers and trade associations to ensure their staff and members are well-informed about the advantages (and potential long-term cost savings) of energy efficient products will increase the chances of these messages reaching consumers<sup>54</sup>. Encouraging in-store and online retailers to give environmentally-friendly products more visibility in the store may improve product uptake by consumers. Around 3 in 10 EU citizens feel that the best way for retailers to promote environmentally-friendly products is to provide better information to consumers. Approximately half of EU citizens thought that retailers should promote environmentally-friendly products in their stores by increasing the visibility of these products on store shelves or by having a green corner dedicated to such products<sup>55</sup>. Consumers have been found to be particularly receptive to face-to-face information

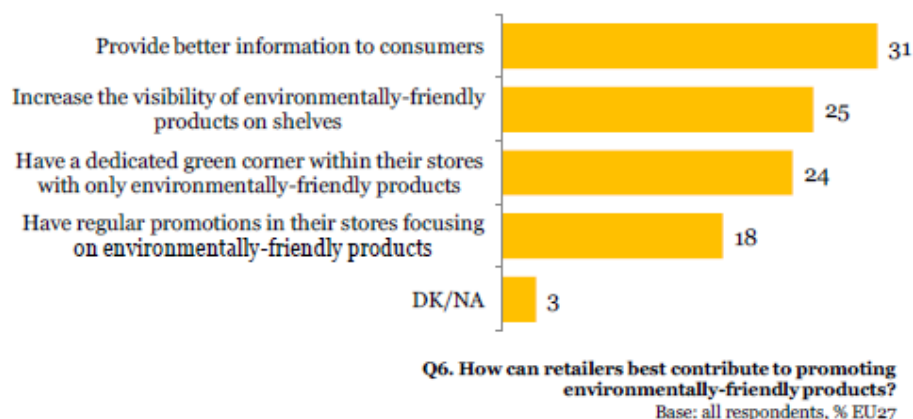
<sup>52</sup> Response of ECOS, the EEB, CAN-Europe, INFORSE-Europe, Greenpeace, WWF and Friends of the Earth to the EC Consultation Document on the revision of the Energy Labelling Directive 92/75/EEC, 2008.

<sup>53</sup> Consumers International, Accountability (2007), What Assures Consumers on Climate Change?

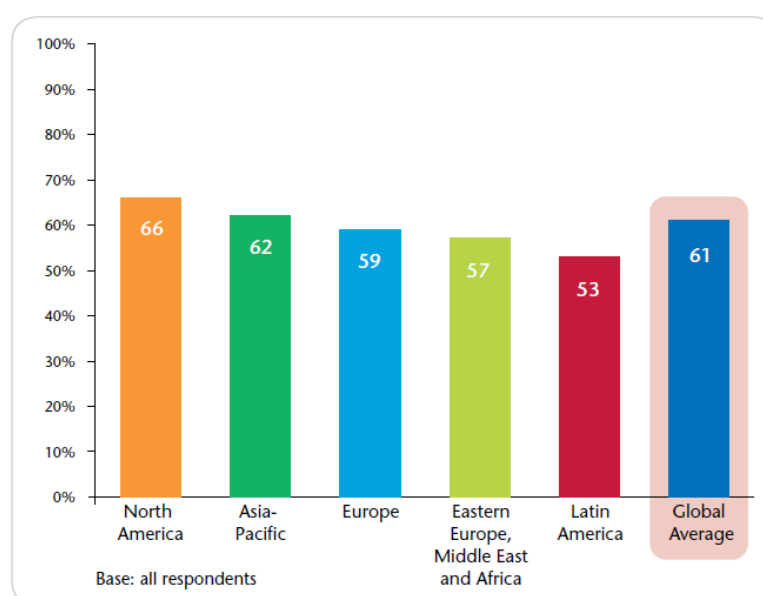
<sup>54</sup> PSI, BIO, Ecologic (2009): Real World Consumer Behaviour Towards Purchasing Environmentally-Friendly Goods and Services. Report for the European Commission, Report for DG Environment

<sup>55</sup> Eurobarometer (2009), European Attitudes Towards Sustainable Consumption

provision from trusted intermediaries: for example, consumers are more likely to listen to advice about smarter driving when taking their vehicles for a service at a mechanics<sup>56</sup>.



**Figure 8: Best way for retailers to promote environmentally-friendly products<sup>57</sup>**



**Figure 9: Percentage of consumers that consider blogs a reliable source of information<sup>58</sup>**

Finally, nowadays, it is impossible to discuss consumer choice and consumption trends without mentioning the influence of the internet and the evolution in online-shopping. Studies have shown that the invention of the internet has created a significant shift in the way that consumers traditionally shop<sup>59</sup>. Today, a consumer can virtually shop through the

<sup>56</sup> King (2008) The King Review of Low-Carbon Cars. Part II: Recommendations for action. March 2008. London: HM Treasury.

<sup>57</sup> WBCSD (2009), Sustainable Consumption Facts and Trends From a Business Perspective, Source of graphic : Nielsen, Trust in Advertising, a global Nielsen consumer report, October 2007

<sup>58</sup> WBCSD (2009), Sustainable Consumption Facts and Trends From a Business Perspective, Source of graphic : Nielsen, Trust in Advertising, a global Nielsen consumer report, October 2007

<sup>59</sup> Hasslinger, Anders et al. (2007), Consumer Behaviour in Online Shopping, Krstianstad University, Department of Business Studies Dissertation Paper



internet at anytime of the day, in any location. A recent study found that the main influencing factors for consumers to purchase books (the most frequently purchased item online), are price, trust, and convenience<sup>60</sup>. Prices for books are often lower on the internet compared to physical stores due to lower costs, and it is considered more convenient to shop for books online using several sifter book sites from home. Finally, trust was an important has the consumer is obligated to share personal and financial information such as name, address, and credit card number.

Closely linked to on-line shopping, consumers are also using the internet as an important source of information about products. Studies show that consumers are also increasingly turning to the Internet as a trusted source of peer-generated information. For example, 61% of consumers now consider blogs or review sites as a reliable source of information, and more than half trust consumer-generated media and branded websites (see Figure 9)<sup>61</sup>. Moreover, “web 2.0” (web-based communities such as social-networking sites, wikis and blogs) and mobile technologies have made it easier for consumers to access, edit and share content on websites such as eBay, YouTube, MySpace, Facebook and Zagat<sup>62</sup>.

## 2.2. FORMATION OF HYPOTHESES

The objective of this section of the report is to propose a set of hypotheses based on understanding of some important drivers of consumer behaviour and consumer responses to different forms of consumer demand policy. In addition, the uncertainties highlighted by the different hypotheses help to identify the most important outstanding questions on consumer behaviour in relation to consumer demand policy for which further research is needed.

The hypotheses have been designed to be as specific as possible to assist policy makers as well as to enable them to be tested on real world consumers. For each of the hypotheses, relevant policy instruments, predicted policy outcomes, assumptions, and uncertainties are described.

### ■ Predicted policy outcomes

A list of consumer policy instruments are listed for each of the hypothesis. Most of the predicted policy outcomes relate to an increase in product sales due to the design and implementation of a certain policy instrument.

### ■ What is being tested?

For each of the hypothesis, a description is given of the different behavioural aspects that are being tested by the hypothesis.

### ■ Policy instrument

<sup>60</sup> Hasslinger, Anders et al. (2007), Consumer Behaviour in Online Shopping, Krstianstad University, Department of Business Studies Dissertation Paper

<sup>61</sup> WBCSD (2009), Sustainable Consumption Facts and Trends From a Business Perspective

<sup>62</sup> WBCSD (2009), Sustainable Consumption Facts and Trends From a Business Perspective



Where relevant, the hypotheses also include the consumer policy instrument that would be used. Different policy instruments used within the context of consumer policy have already been described and include instruments such as labels, financial instruments, and other information provision tools (e.g. websites, leaflets, awareness campaigns).

### ■ Assumptions

Assumptions are included in each of the hypotheses and further detail the different variables for which the hypotheses are based. For example, in certain hypotheses, assumptions for price and price reductions are explained, as well as factors relating to labels colour and size. The assumptions are also based on drivers of consumer behaviour.

### ■ Uncertainties

For each of the hypothesis, underlying uncertainties are listed. It is important to determine the level of uncertainties that underlie each of the hypotheses in order to identify which key drivers of consumer behaviour need further research, and set the stage for the design of experiments. So far, some common uncertainties are seen in many of the hypotheses. These include for example:

- The types of consumer (consumer segmentation) that would be most responsive to the hypothesis.
- The types of products for which the hypothesis is relevant.

Table 4 lists the hypotheses that have been developed based on the analysis in Chapter 2. The relevant behavioural issue being tested by the hypothesis is also listed.

**Table 2: List of developed hypotheses**

|   | Hypotheses   | Behavioural factor being tested   |
|---|--|-----------------------------------|
| 1 | A product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.  | Anchoring and adjustment          |
| 2 | Framing effects that present the lifetime cost of using non-energy saving products will prompt increased purchasing of energy-saving products compared to presenting information on the lifetime savings of energy saving products.  | Framing effects and loss aversion |
| 3 | Implementing a 5 % surcharge for more environmentally harmful products and making consumers' aware of this charge will result in a greater decrease in sales of these products than if a 5 % cash back incentive was given for purchasing environmentally friendly products. | Loss aversion                     |
| 4 | Including both energy rating and annual operating costs in an energy label will result in greater sales of the more  | Discounting                       |

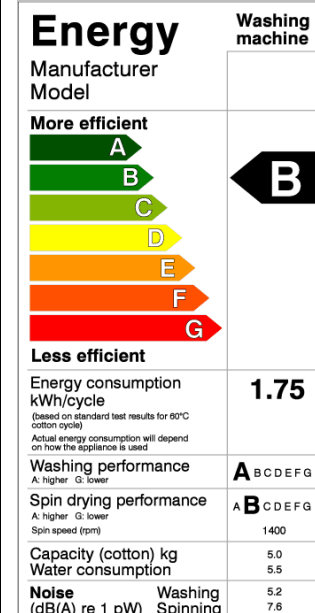
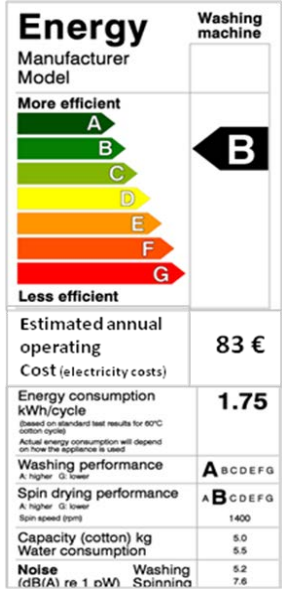
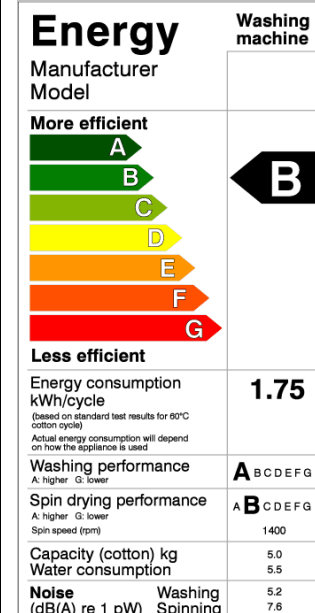
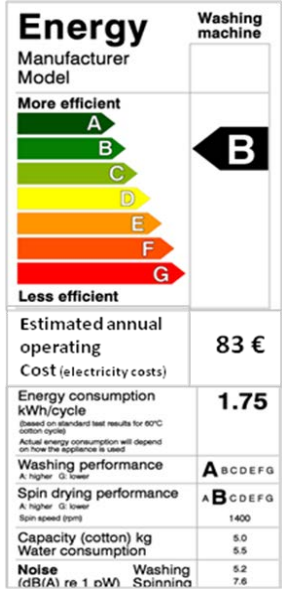
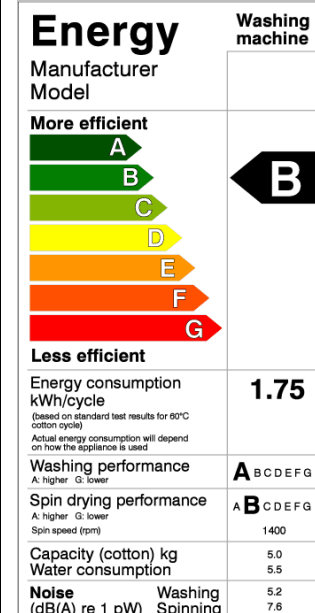
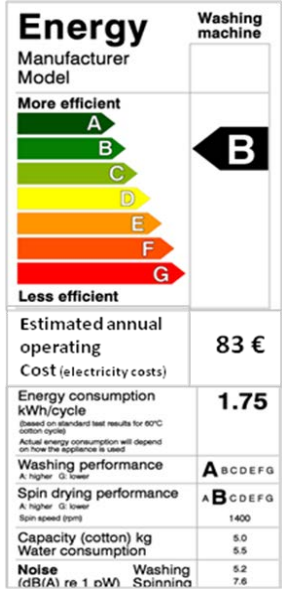
|    | Hypotheses  | Behavioural factor being tested                           |
|----|---|---|
|    | energy efficient than if only energy performance is presented in the label.   |   |
| 5  | A product with a label that explicitly states a tax included in the price will result in fewer sales than a product with the same total price but without a label that explicitly states the tax included.  | The salience of a tax                                     |
| 6  | Zero rating an annual vehicle tax on the least polluting vehicles will result in more sales of these vehicles than if the same saving is offered as an annual cash-back   | 'Zero-price effect' (consumer attraction to 'free')       |
| 7  | A product that has a label displaying environmental endorsement from an independent third party will result in a greater increase in sales than a product with no endorsement, but with a label which provides the specific environmental information necessary to justify the claim. | Endorsement from an independent third party               |
| 8  | A reduction in price (via a government subsidy) presented as environmentally motivated will result in a greater increase in sales of a product, than if the same price reduction is presented for non-environmental reasons.  | Endorsement from Government                               |
| 9  | An energy label integrating government endorsement and comparison of energy performance will result in greater sales of a product compared to the same label without the endorsement.   | Endorsement from Government                               |
| 10 | A product that has a label displaying endorsement of an independent body will result in a greater increase sales compared to a product with a label showing government endorsement. .   | Endorsement from Government and independent third party   |
| 11 | An energy label that states product energy efficiency compared with other products within the same product group will prompt higher sales of energy efficient products than a label that does not provide comparative information.  | Consumers make purchasing decisions by comparing products |
| 12 | A consumer endorsement in the form of a consumer award for EU ecolabelled products will increase sales of the highest performing products.  | Social influence  |
| 13 | Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.  | Social influence  |

|    | Hypotheses   | Behavioural factor being tested |
|----|--|---------------------------------|
| 14 | Environmentally-preferable products that are recommended by salespersons will sell more than the same environmentally-preferable products that are not recommended by in-store salespersons. | Social influence                |

|   | <b>Hypothesis 1: Anchoring and adjustment</b>   |
|---|---|
| <b>What is being explored?</b>          | <b>Anchoring and adjustment.</b> When consumers evaluate product prices, their evaluations are affected by reference points, or ‘anchors’, against which prices are evaluated. If a recommended retail price (RRP) is stated, consumers may compare the sale price with the RRP and judge the purchase to be more beneficial than if just the sale price was given.   |
| <b>Example of a testable hypothesis</b> | An environmentally-preferable product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than an environmentally-preferable product of the same sale price with no stated RRP.   |
| <b>Predicted policy outcome</b>         | Increased uptake of more environmentally preferable products.   |
| <b>Consumer policy instrument</b>       | Voluntary agreements with retailers that encourage the use of recognised marketing techniques to promote the uptake of environmentally-preferable products.   |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumer choice is context dependent. Information is not evaluated independently but is done so in relation to reference points and ‘anchors’.</li> <li>• Consumer judgements are likely to rely on anchors when buying both durable and non-durable products, and any products where manufacturers are likely to provide retailers with a recommended sales price.</li> </ul> |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• For what other products would this hypothesis also be relevant?</li> <li>• What type of consumer (or socio-economic or cultural groups) would this hypothesis be most relevant for?</li> <li>• How do consumers in different countries react to items being on sale?</li> </ul>  |

|   |  |
|---|--|
| <b>What is being explored?</b>          | <p style="text-align: center;"><b>Hypothesis 2: Framing and loss aversion</b></p> <p><b>The effect of framing</b> or the presentation of information on consumer choice, <b>and the impact of loss aversion</b> on decision-making.</p>  |
| <b>Example of a testable hypothesis</b> | <p>Framing effects that present the lifetime cost of using non-energy saving products will prompt increased purchasing of energy-saving products compared to presenting information on the lifetime savings of energy saving products. <i>Example below in which Campaign B would be more effective in influencing consumer behaviour:</i></p> <p><b><i>Campaign A: ‘Using the most energy efficient boiler will save you around €500 a year on energy bills’</i></b></p> <p><b><i>Campaign B: ‘Using an inefficient boiler could cost you as much as €500 a year extra on energy bills’</i></b></p> |
| <b>Predicted policy outcome</b>         | Information campaigns aimed more towards loss aversion to influence more consumers to adopt sustainable consumption patterns.  |
| <b>Consumer policy instrument</b>       | An information campaign that indicates the costs of using energy inefficient products in order to promote uptake of energy efficient products.   |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumer choice is largely dependent on the way in which different options or information are framed (or presented).</li> <li>• Consumers are loss averse thus are more reluctant to suffer the ‘loss’ of the extra attributes of a product or service than they are willing to pay for the benefits of them.</li> <li>• This particular hypothesis would explore consumer responses when buying different products, but the findings would be applicable to policy associated with services (for example, energy) as well.</li> </ul>                      |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• For what other products would this hypothesis also be relevant?</li> <li>• What type of consumer and other demographic factors would this hypothesis be most relevant for?</li> </ul>   |

| <b>Hypothesis 3: Loss aversion and fiscal incentives</b> |  |
|--|--|
| <b>What is being explored?</b>                           | Consumers are loss averse and tend to place a higher value on avoiding loss (or costs) than they do on the benefits of gains. This suggests a tax or surcharge on environmentally-harmful products will have a greater impact on consumer behaviour than an incentive of the same value.   |
| <b>Example of a testable hypothesis</b>                  | Implementing a 5 % surcharge for more environmentally harmful products and making consumers' aware of this charge will result in a greater decrease in sales of these products than if a 5 % cash back incentive was given for purchasing environmentally friendly products.   |
| <b>Predicted policy outcome</b>                          | Reduced uptake of the least environmentally friendly products because consumers will want to avoid paying the surcharge on environmentally harmful products.   |
| <b>Example consumer policy instrument</b>                | A 5 % tax on environmentally harmful products.   |
| <b>Assumptions</b>                                       | <ul style="list-style-type: none"> <li>• Consumers are loss averse so requiring consumers to pay more for environmentally harmful goods is likely to prove a more effective means of changing consumer behaviour than offering money-back rebates or incentives to encourage the sale of less harmful products. Individuals want to avoid loss (or costs) more than they want to benefit from gains, thus consumers find additional taxation more off-putting than a similar-sized incentive.</li> </ul>   |
| <b>Uncertainties</b>                                     | <ul style="list-style-type: none"> <li>• What would be the most effective way to inform consumers about the 5% surcharge on environmentally harmful products?</li> <li>• Can these two measures be presented in an equivalent way?</li> <li>• Would certain consumers see the surcharge as paying for their 'bad behaviour' and thus feel less guilty about purchasing the environmentally harmful product?</li> <li>• How would a more or less tax amount affect consumer response?</li> <li>• For which products would this hypothesis be most relevant?</li> <li>• Would this hypothesis be more relevant for a specific consumer segment and other demographic factors?</li> </ul> |

| <p><b>What is being explored?</b></p>  | <p><b>Hypothesis 4: Discounting and information provision</b></p> <p>Consumers struggle with the complexity of translating energy consumption into a saving and place greater emphasis on short-term benefits over long-term costs. Making running costs more salient helps consumers consider these costs during decision-making.</p>  |  |   |  |  |
|--|---|--|---|--|--|
| <p><b>Example of a testable hypothesis</b></p>                                     | <p>Including both energy rating and annual operating costs in an energy label will result in greater sales of the more energy efficient than if only energy performance is presented in the label.</p> <p><b>Visual example:</b></p> <table border="1"> <thead> <tr> <th>An energy label that displays an energy rating</th><th>An energy label that displays an energy rating and annual running costs</th></tr> </thead> <tbody> <tr> <td>  </td><td>  </td></tr> </tbody> </table> | An energy label that displays an energy rating | An energy label that displays an energy rating and annual running costs |  |  |
| An energy label that displays an energy rating                                     | An energy label that displays an energy rating and annual running costs   |  |   |  |  |
|  |   |  |   |  |  |
| <p><b>Predicted policy outcome</b></p>   | <p>Consumers will be able to better interpret running costs and thus buy more energy efficient products.</p>  |  |   |  |  |
| <p><b>Consumer policy instrument</b></p>   | <p>An energy label that conveys both running costs and energy performance rating.</p>   |  |   |  |  |
| <p><b>Assumptions</b></p>  | <ul style="list-style-type: none"> <li>• The nature of energy using products means that consumers are subject to fewer emotional influences than when buying other products. Therefore, consumers tend to think of energy-using products in terms of their use, price and efficiency.</li> <li>• That the proposed savings do justify any additional investment within the consumers discounting framework.</li> <li>• Environmental improvements tie in to consumers' desires to maximise their cost savings because higher environmental performing products will result in lower long term running costs.</li> </ul>                                     |  |   |  |  |

|                      |  |
|----------------------|--|
|                      | <ul style="list-style-type: none"> <li>• Economic performance (due to product efficiencies and lower running costs) is closely linked to environmental performance (as environmental performance usually requires greater product performance and less use of resources during operation).</li> <li>• Relevant products that this instrument could be applied to include energy-using products such as white goods and consumer electronics.</li> <li>• This estimated cost information, which will appear on the labels in Euros per year, would provide consumers with a clear context to compare the energy efficiency of different appliance models. It would also help consumers assess trade-offs between the energy costs of their appliances and other expenditures.</li> </ul>  |
| <b>Uncertainties</b> | <ul style="list-style-type: none"> <li>• Would displayed running costs over the expected life of the appliance further promote sales of the most efficient products?</li> <li>• Would offering to calculate and highlight each consumer's most cost effective 'buys' (based on the consumer's use pattern and revealed discount rates) further promote sales of the most efficient products? This would particularly suite online retailers but can be done by sales representatives.</li> <li>• What type of consumer and other demographic factors would this hypothesis be most relevant for?</li> <li>• Would displaying future cost savings be more influential on consumers than displaying running/operating costs?</li> <li>• Other than running costs, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li> </ul> |



|   | <b>Hypothesis 5: The salience of taxation</b>   |
|---|---|
| <b>What is being explored?</b>          | Consumers under-react to taxes when taxes are less salient during the moment that purchase decisions are made. Efforts to make taxes of environmentally-damaging products more salient to consumers are likely to result in those taxes having a greater impact on decision-making. |
| <b>Example of a testable hypothesis</b> | A product with a label that explicitly states the VAT included in the price will result in fewer sales than a product with the same total price but without a label that explicitly states the VAT included.  |
| <b>Predicted policy outcome</b>         | Increased effectiveness of fiscal incentives and information provision.   |
| <b>Consumer policy instrument</b>       | Information provision and taxation.   |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Assumes that consumers are aware of existing taxes (i.e. the label merely makes the tax more salient, rather than informing consumers about the tax for the first time).</li> </ul>  |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• Would this hypothesis be more relevant for a specific consumer segment and other demographic factors?</li> <li>• Would this hypothesis be relevant for any other product groups and tax regime?</li> </ul>                                 |

| <b>Hypothesis 6: The ‘zero-price effect’</b> |   |
|--|---|
| <b>What is being explored?</b>               | Consumers respond more to price reductions when they mean that something becomes ‘free’ that when the price reduction results in a seemingly insignificant cost remaining.  |
| <b>Example of a testable hypothesis</b>      | Zero rating an annual vehicle tax on the least polluting vehicles will result in more sales of these vehicles than if the same saving is offered as an annual cash-back.  |
| <b>Predicted policy outcome</b>              | The use of zero rating annual vehicle tax to encourage more consumers to purchase less polluting vehicles.  |
| <b>Consumer policy instrument</b>            | Zero rating annual taxes on least polluting vehicles.   |
| <b>Assumptions</b>                           | <ul style="list-style-type: none"> <li>• Consumers trust the cash-back mechanism over the life of the vehicle equally to the reduced road tax.</li> <li>• Both the cash-back scheme and the reduced tax are seen as an equal government endorsement.</li> <li>• Consumers seek the identity of the ‘green consumer’.</li> </ul> |
| <b>Uncertainties</b>                         | <ul style="list-style-type: none"> <li>• Would this hypothesis be more relevant for a specific consumer segment and other demographic factors?</li> <li>• Would this hypothesis be relevant for any other product groups and tax regime?</li> </ul>   |

|   | <b>Hypothesis 7: Independent third party endorsement</b>   |
|---|--|
| <b>What is being explored?</b>          | The impact of <b>endorsement from an independent third party</b> . Consumers struggle with complexity and therefore seek the endorsement of independent bodies that they trust as a way of cutting through complexity.   |
| <b>Example of a testable hypothesis</b> | A product that has a label displaying environmental endorsement from an independent third party will result in a greater increase in sales than a product with no endorsement, but with a label which provides the specific environmental information necessary to justify the claim.  |
| <b>Predicted policy outcome</b>         | Demand for environmental claims to be backed up by other sources such as by independent bodies.  |
| <b>Consumer policy instrument</b>       | A label conveying environmental approval of an independent body.   |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumers prefer a product that is endorsed because it makes consumers feel more confident in the label's authority.</li> <li>• Consumers' most trusted sources for environmental information come from scientists, environmental groups, and independent bodies.</li> <li>• A label endorsed by other bodies (e.g. celebrities, independent bodies, etc.) are not available for the product.</li> <li>• The independently endorsed label and the environmental claim are used on similar products.</li> <li>• The price of the products stays the same.</li> </ul>   |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• How to control for the general look and presentation of the product whilst making this change?</li> <li>• For which products would endorsements of independent bodies be more effective in influencing consumer choices?</li> <li>• Which independent bodies endorse labels that could be considered widely-recognised? This will most likely differ according to country and product.</li> <li>• To what extent would labels endorsed by other bodies such as government, retailers or celebrities impact consumer choice?</li> <li>• Would this hypothesis be more relevant for a specific consumer segment?</li> </ul> |

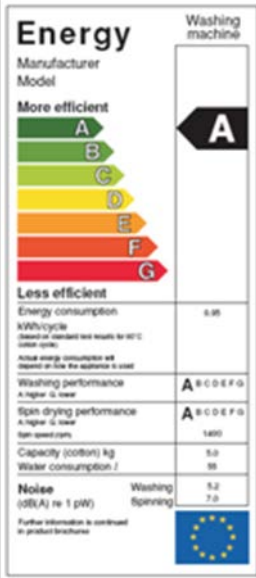
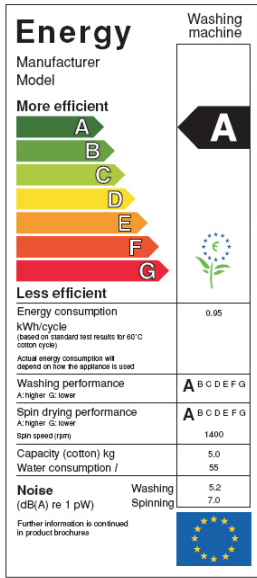
|   | <b>Hypothesis 8: Endorsement from Government</b>  |
|---|---|
| <b>What is being explored?</b>          | Endorsement from government. The impact of government endorsement on sales of environmentally less harmful products.  |
| <b>Example of a testable hypothesis</b> | A reduction in price (via a government subsidy) presented as environmentally motivated will result in a greater increase in sales of a product, than if the same price reduction is presented for non-environmental reasons.  |
| <b>Predicted policy outcome</b>         | Greater consumer uptake of certain environmentally-friendly products than would have been anticipated by the same reduction in price without the environmental context.   |
| <b>Consumer policy instrument</b>       | An endorsement of environmentally less harmful products communicated via a government subsidy targeted at the product.  |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumers will trust that the reduction in price is directly related to governmental action.</li> <li>• Consumers will interpret government intervention to reduce the product's price as environmentally motivated government endorsement for the product.</li> <li>• Consumers trust the government's motives and its assessment of the environmental issues in question.</li> <li>• Consumers have a willingness to pay for the environmentally less harmful product.</li> <li>• Size and design of both labels are the same and would seek for the consumer 'recognise' the involvement of the government. Only information on the reason for the reduction in price would change.</li> </ul>  |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• Would consumers in specific countries be more influenced by government involvement in the pricing of products than in others?</li> <li>• Are there certain types of consumers that would be more or less influenced by government intervention?</li> <li>• How should information be effectively conveyed (directly through a label placed on the product as seen in visual above? Through awareness campaigns? Through in-store poster displays placed by the reduced price products?)</li> <li>• For which types of products are suitable for testing these hypotheses?</li> <li>• Will consumers who feel that the environment is the responsibility of the government be dissuaded to purchase the product with a reduced due to government intervention?</li> </ul> |

## Hypothesis 9: Endorsement by Government

An energy label integrating government endorsement and comparison of energy performance will result in greater sales of a product compared to the same label without the endorsement.







### Visual example:

Example of a testable hypothesis

| EU Energy label without EU ecolabel endorsement  | EU Energy label with EU ecolabel endorsement  |
|--|---|
|  <p>The label shows a standard energy efficiency scale from A (green) to G (red). The washing machine is rated 'A'. It includes technical specifications like energy consumption (0.95 kWh/cycle), washing performance (A), spin drying performance (A), capacity (5.0 kg), water consumption (55 l), and noise (5.2 dB(A) re 1 pW).</p> |  <p>This label is identical to the one on the left but includes the EU ecolabel (a green leaf logo) next to the 'A' rating, indicating government endorsement of the energy efficiency.</p> |

|                                   |   |
|-----------------------------------|---|
| <b>What is being tested?</b>      | Some consumers struggle with complexity and seek additional help to reassure of the environmental and technical performance of a product.   |
| <b>Predicted policy outcome</b>   | Increased sales of energy efficient products. Encourage manufacturers to produce more energy efficient products that meet endorsement criteria to create competitive advantage.   |
| <b>Consumer policy instrument</b> | An energy label that integrates both government endorsement and comparison of energy performance.   |
| <b>Assumptions</b>                | <ul style="list-style-type: none"> <li>• Energy-performance testing procedures can be harmonised for both label criteria and test procedures are the same for both labels.</li> <li>• The endorsement is a widely-recognised label or conveys explicitly the environmental benefits of the product.</li> <li>• Consumers would be doubly assured of the authority and accuracy of the label if both a comparative and endorsement approach was used.</li> <li>• Relevant products that this instrument could be applied to include energy-using products such as white goods and consumer electronics.</li> </ul> |
| <b>Uncertainties</b>              | <ul style="list-style-type: none"> <li>• How would a label with a comparative system integrated with other types of endorsement such as consumer endorsement or endorsement from an independent body influence consumer behaviour?</li> </ul>   |

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• What type of consumer and other demographic factors would this hypothesis be most relevant for?</li><li>• Other than government endorsement, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li></ul> |
|--|--|

|  | <b>Hypothesis 10: Independent third party endorsement</b>  |   |   |  |  |
|--|--|---|---|--|--|
| <b>What is being explored?</b>   | Consumers trust information from independent bodies more than from the government.   |   |   |  |  |
| <b>Example of a testable hypothesis</b>  | A product that has a label displaying endorsement of an independent body will result in a greater increase sales compared to a product with a label showing government endorsement.  |   |   |  |  |
|  | <b>Visual example:</b>   |   |   |  |  |
|  | <table><tr><th>Wood floors with environmental claim endorsed by the FSC, an independent body</th><th>Wood floors with similar environmental claim endorsed by the EU through the EU Ecolabel</th></tr><tr><td></td><td></td></tr></table>                    | Wood floors with environmental claim endorsed by the FSC, an independent body | Wood floors with similar environmental claim endorsed by the EU through the EU Ecolabel |  |  |
| Wood floors with environmental claim endorsed by the FSC, an independent body      | Wood floors with similar environmental claim endorsed by the EU through the EU Ecolabel  |   |   |  |  |
|  |    |   |   |  |  |
| <b>Predicted policy outcome</b>  | More wide-spread use of independently endorsed labels to help promote environmentally-friendly products.   |   |   |  |  |
| <b>Consumer policy instrument</b>  | A label conveying environmental approval of an independent body.   |   |   |  |  |
| <b>Assumptions</b>   | <ul style="list-style-type: none"><li>• Consumers trust independent bodies more than governments.</li><li>• The endorsement label does not include any other environmental information or comparison schemes.</li><li>• Consumers interpret labels such as the EU ecolabel as government endorsement from the EU.</li><li>• The price of the products stays the same.</li></ul>  |   |   |  |  |
| <b>Uncertainties</b>   | <ul style="list-style-type: none"><li>• Would this hypothesis apply only to certain types of products for which there is the presence of both an independent body endorsement and a government endorsement?</li><li>• What type of consumer and other demographic factors would this hypothesis be most relevant for? Would this hypothesis hold true for countries where citizens are highly trustworthy of government?</li></ul> |   |   |  |  |

| <b>Hypothesis 11: The provision of comparative information</b> |   |
|--|---|
| <b>What is being tested?</b>                                   | Consumers make decisions by comparing products (within product groups) rather than evaluating the costs and benefits of each product independently.   |
| <b>Example of a testable hypothesis</b>                        | An energy label that states product energy efficiency compared with other products within the same product group will prompt higher sales of energy efficient products than a label that does not provide comparative information.  |
| <b>Predicted policy outcome</b>                                | Increased uptake of environmentally-preferable products.  |
| <b>Consumer policy instrument</b>                              | Information provision and labelling.  |
| <b>Assumptions</b>   | <ul style="list-style-type: none"> <li>• Energy-performance testing procedures can be harmonised for both label criteria and test procedures are the same for both labels.</li> <li>• The endorsement is a widely-recognised label or conveys explicitly the environmental benefits of the product.</li> <li>• Consumers would be doubly assured of the authority and accuracy of the label if both a comparative and endorsement approach was used.</li> <li>• Relevant products that this instrument could be applied to include energy-using products such as white goods and consumer electronics.</li> </ul> |
| <b>Uncertainties</b>   | <ul style="list-style-type: none"> <li>• How would a label with including comparative information influence consumer behaviour?</li> <li>• What type of consumer and other demographic factors would this hypothesis be most relevant for?</li> <li>• Other than government endorsement, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li> </ul>   |



|   |   |
|---|---|
| <b>What is being explored?</b>          | <b>Hypothesis 12: Consumer endorsement</b>  |
|   | Consumers are cautious of the effectiveness of some environmentally-friendly products and therefore seek verification of performance from other consumers.  |
| <b>Example of a testable hypothesis</b> | <p>A consumer endorsement in the form of a consumer award for EU ecolabelled products will increase sales of the highest performing products.</p> <p><i>Example: “This EU ecolabelled all-purpose cleaner won the 2010 Consumer’s Best Ecolabelled Product Award.”</i></p>  |
| <b>Predicted policy outcome</b>         | Increased consumer interest in EU ecolabelled products. A higher percentage of sales of EU ecolabelled products. Encourage manufacturers to satisfy consumers with higher environmental performing products.  |
| <b>Consumer policy instrument</b>       | A consumer endorsed award for government-labelled products (e.g. products under the EU ecolabel or the EU energy label).  |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumer purchasing decisions are significantly influenced by the behaviour of others. Consumers’ most trusted sources for environmental information include those from friends and family. One study suggests that the best strategy to change consumer behaviour is to use information to allow individuals to feel that they are acting as part of a community which reciprocates and endorses their action, rather than on an individual basis.</li> <li>• In order to select awarded products, consumers would be able to vote for their “favourite” product and communicate their responses to the relevant authority. For example, this would be done through an online voting system for the best EU eco-labelled product of its category.</li> <li>• This hypothesis would be tested on consumers that already purchase EU ecolabelled products.</li> </ul> |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• How could the consumer endorsement be most effectively displayed to influence the greatest number of consumers? As a label placed directly on the packaging of the product? Through the EU ecolabel website?</li> </ul>  |

|   | <b>Hypothesis 13: Consumer endorsement and product sales information</b>  |
|---|---|
| <b>What is being explored?</b>          | Consumers look to the behaviour of other consumers as a cue for how to behave. Consumer decision-making can therefore be influenced by <b>information about product sales</b> , for example in the form of a label that states '99% of consumers bought this energy efficient boiler' or 'This is this store's best selling energy efficient television'.   |
| <b>Example of a testable hypothesis</b> | Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.  |
| <b>Predicted policy outcome</b>         | Opportunities to work with retailers and manufacturers to develop new ways of promoting uptake of environmentally-preferable goods.   |
| <b>Consumer policy instrument</b>       | Improved information provision and the development of new ways of promoting environmentally-preferable goods. Improved trading standards for retailers that provide consumer ratings as part of their services to customers.  |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>• Consumer purchasing decisions are significantly influenced by the behaviour of others, regardless of independent product assessments. This means consumer judgements can be biased by the provision of information about high product sales.</li> <li>• Information provision must be truthful so product sales labels could only be used if products really were selling well. Retailers are free to choose which products to display such labels on though.</li> <li>• Consumer endorsement is likely to be particularly effective in online retail environments, where consumers often over-rely on the recommendations of others.</li> </ul> |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>• How could the consumer endorsement be most effectively displayed to influence the greatest number of consumers?</li> <li>• What differences might arise from the use of product sales information online versus in-store?</li> <li>• What role can government play in ensuring consumer endorsements are transparent, reliable and beneficial to consumers?</li> </ul>   |

|   |   |
|---|---|
| <b>What is being explored?</b>          | <b>Hypothesis 14: Influence of salesperson recommendations</b>  |
|   | Consumer purchase decisions are heavily influenced by personal recommendations and, in the case of some products, particularly from in-store salespersons. Consumers are particularly susceptible to <b>the impact of salesperson recommendations</b> when buying products possessing ‘experience’ qualities (i.e. those which cannot be experienced until post-purchase), such as vehicles or electrical products.   |
| <b>Example of a testable hypothesis</b> | Environmentally-preferable products that are recommended by salespersons will sell more than the same environmentally-preferable products that are not recommended by in-store salespersons.  |
| <b>Predicted policy outcome</b>         | Increased uptake of environmentally-preferable products through improved provision of information.  |
| <b>Consumer policy instrument</b>       | Voluntary agreements with retailers to encourage the provision of information about environmentally-preferable products in-store, by sales staff.   |
| <b>Assumptions</b>                      | <ul style="list-style-type: none"> <li>Assumes products are being bought in-store rather than an online retail environment.</li> </ul>  |
| <b>Uncertainties</b>                    | <ul style="list-style-type: none"> <li>There is evidence that consumers are more likely to trust information from someone that they ‘like’ than someone they dislike. How would the impact of information provision via a salesperson differ depending on the person themselves?</li> <li>For which products do salespersons have the greatest impact on consumer decision-making? Are particularly groups of consumers more susceptible to the advice of salespersons than others? At which point in the decision-making process does the advice of salesperson have the greatest impact on consumers?</li> <li>How could the impact of the information provided by a salesperson be distinguished from the impacts of other factors that influence consumer decision-making?</li> </ul> |

### 3. DEEPER INVESTIGATION INTO THE NATURE OF KEY DRIVERS OF CONSUMER DECISION

This chapter provides more detailed information on the nature of some of the key drivers of consumer behaviour for which there is uncertainty. This information will help to further refine the hypotheses, identify priority areas for further research, and develop the guideline documents.

This chapter is organised into 3 principal sections:

- Identification of most important drivers of consumer behaviour
- Investigation of other influences on consumer behaviour
- Implications for hypothesis and uncertainties

#### 3.1. IDENTIFICATION OF MOST IMPORTANT DRIVERS AND UNDERLYING UNCERTAINTIES

The study *Real World Consumer Behaviour*<sup>63</sup>, which the project team previously worked on, identified a number of concepts within behavioural economics that influence consumer behaviour and are therefore important for policy. For example, the concept of ‘bounded rationality’ refers to the way in which a human mind has limited information processing and storage capabilities, leading humans to use simple rules of thumb or ‘heuristics’ to help make decisions and solve problems. These mental ‘short-cuts’ help people make decisions within the hustle and bustle of normal life. Mental short-cuts rely on experience-based techniques that help in problem solving, learning and discovery.

Based on the existing knowledge base, a number of important factors that influence consumer responses to the policy interventions in scope have been identified through the research carried out to develop the hypotheses. The hypotheses that have been developed cover the following influences on consumer behaviour:

- The impact of anchoring and adjustment
- The influence of framing effects (the way in which information is presented)
- The influence of loss aversion
- The influence of discounting
- The influence of ‘free’
- The influence of endorsement

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<sup>63</sup> PSI et al., 2009, Designing policy to influence consumers: Consumer behaviour relating to the purchasing of environmentally preferable goods. Report for the European Commission

With any hypothesis, there are a certain number of uncertainties to be further tested and researched, to determine how these uncertainties may affect the outcomes of the hypothesis. Thus far, some common uncertainties are seen in many of the hypotheses. These include for example:

- The types of consumer (or consumer 'segment') that would be most responsive to the hypothesis. How do different types of people react to policy instruments?)
- The types of products for which the hypothesis is relevant. Are some instruments more effective in influencing the purchasing of certain products?

This section further investigates the uncertainties identified under the different drivers of consumer behaviour that support the hypotheses. See Table 5 for a list of the drivers and the different uncertainties for each of the hypotheses.

**Table 3: Project hypotheses and the uncertainties underlying associated drivers of consumer behaviour**

|   | Hypotheses   | Behavioural driver(s) being tested | Uncertainties  |
|---|--|------------------------------------|--|
| 1 | A product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.  | Anchoring and adjustment           | <ul style="list-style-type: none"> <li>• For what products would this hypothesis be relevant?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• How do consumers in different countries react to items being on sale?</li> </ul>   |
| 2 | Presenting a comparison of the lifetime cost of using non-energy saving products against the lifetime cost of energy-saving products will prompt increased purchasing of energy-saving products compared to presenting information on the lifetime savings of energy-saving products only. | Framing effects and loss aversion  | <ul style="list-style-type: none"> <li>• For what products would this hypothesis be relevant?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>  |
| 3 | Implementing a 5% tax for more environmentally harmful products and making consumers aware of this charge will result in a greater decrease in sales of these products than if a 5% cash-back incentive was given for purchasing environmentally friendly products.                        | Loss aversion                      | <ul style="list-style-type: none"> <li>• What would be the most effective way to inform consumers about the 5% surcharge on environmentally harmful products?</li> <li>• Can these two measures be presented in an equivalent way?</li> <li>• Would certain consumers see the surcharge as paying for their 'bad behaviour' and thus feel less guilty about purchasing the environmentally harmful product?</li> <li>• How would a greater or smaller tax or cash-back amount affect consumer response?</li> <li>• For which products would this hypothesis be most relevant?</li> </ul> |

|   | Hypotheses   | Behavioural driver(s) being tested        | Uncertainties   |
|---|--|---|---|
|   |  |   | <ul style="list-style-type: none"> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>   |
| 4 | Including both energy rating and annual operating costs in an energy label will result in greater sales of the more energy efficient appliance than if only energy rating is presented in the label.       | Discounting                               | <ul style="list-style-type: none"> <li>• Would display of running costs over the expected life of the appliance further promote sales of the most efficient products?</li> <li>• Would displaying future <i>cost savings</i> be more influential on consumers than displaying <i>running costs</i>?</li> <li>• Would offering to calculate and highlight each consumer's most cost effective 'buys' (based on the consumer's use pattern and revealed discount rates) further promote sales of the most efficient products?<sup>64</sup></li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• Other than running costs, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li> </ul> |
| 5 | A product with a label that explicitly states a tax included in the price will result in fewer sales than a product with the same total price but without a label that explicitly states the tax included. | The salience of a tax                     | <ul style="list-style-type: none"> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• For which products would this hypothesis be relevant?</li> <li>• Would this hypothesis be relevant only for certain tax regimes?</li> </ul>   |
| 6 | Zero rating an annual vehicle tax on the least polluting vehicles will result in more sales of these vehicles than if  | 'Zero-price effect' (consumer attraction) | <ul style="list-style-type: none"> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>   |

<sup>64</sup> This would particularly suite online retailers but could be done by sales representatives.

|   | Hypotheses  | Behavioural driver(s) being tested          | Uncertainties   |
|---|---|---|---|
|   | the same saving is offered as an annual cash-back   | to 'free')                                  | <ul style="list-style-type: none"> <li>• Would this hypothesis be relevant for any other product groups and tax regime?</li> </ul>  |
| 7 | A product that has a label displaying environmental endorsement from an independent third party will result in a greater increase in sales than a product with no endorsement, but with a label which provides the specific environmental information necessary to justify the claim. | Endorsement from an independent third party | <ul style="list-style-type: none"> <li>• How would display of information affect sales?</li> <li>• For which products would endorsements of independent bodies be more effective in influencing consumer choices?</li> <li>• How would the reputation of the endorsing body affect sales?</li> <li>• To what extent would labels endorsed by other bodies such as government, retailers or celebrities impact consumer choice?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>  |
| 8 | A reduction in price (via an environmentally motivated government subsidy) will result in a greater increase in sales of a product, than if the same price reduction is presented for non-environmental reasons.  | Endorsement from Government                 | <ul style="list-style-type: none"> <li>• Would consumers in specific countries be more influenced by government involvement in the pricing of products than in others?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• How would display of information affect sales? (Directly through a label placed on the product as seen in visual above? Through awareness campaigns? Through in-store poster displays placed by the reduced price products?)</li> <li>• For which products would this hypothesis be relevant?</li> </ul> |
| 9 | An energy label displaying government endorsement   | Endorsement from                            | <ul style="list-style-type: none"> <li>• How would a label with a comparative system integrated with other</li> </ul>   |



|    | Hypotheses   | Behavioural driver(s) being tested  | Uncertainties  |
|----|--|---|--|
|    | and energy performance will result in greater sales of a product, compared to the same label without the endorsement.  | Government  | <p>types of endorsement such as consumer endorsement or endorsement from an independent body influence consumer behaviour?</p> <ul style="list-style-type: none"> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• Other than government endorsement, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li> </ul> |
| 10 | A product that has a label displaying endorsement of an independent body will result in a greater increase in sales compared to an identical product with a label showing government endorsement.                                  | Endorsement from Government and independent third party                             | <ul style="list-style-type: none"> <li>• For which products would this hypothesis be relevant?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> <li>• Would this hypothesis hold true for countries where citizens are highly trustworthy of government?</li> </ul>   |
| 11 | An energy label that states product energy efficiency compared with other products within the same product group will prompt higher sales of energy efficient products than a label that does not provide comparative information. | Consumers make purchasing decisions by comparing products; Anchoring and adjustment | <ul style="list-style-type: none"> <li>• What would be the impact on consumers of a label with similar comparison aspect across other environmental indicators?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>  |
| 12 | A consumer endorsement in the form of a consumer award for EU ecolabelled products will increase sales of the highest performing products.   | Social influence  | <ul style="list-style-type: none"> <li>• How would display of information affect sales? (As a label placed directly on the packaging of the product? Through the EU ecolabel website?)</li> <li>• How might the results of the testing of this hypothesis differ across</li> </ul>   |

|    | Hypotheses   | Behavioural driver(s) being tested | Uncertainties   |
|----|--|------------------------------------|---|
|    |  |                                    | different types of consumers?   |
| 13 | Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.   | Social influence                   | <ul style="list-style-type: none"> <li>• What differences might arise from the use of product sales information online versus in-store?</li> <li>• How might the results of the testing of this hypothesis differ across different types of consumers?</li> </ul>   |
| 14 | Environmentally-preferable products that are recommended by salespersons will sell more than the same environmentally-preferable products that are not recommended by in-store salespersons. | Social influence                   | <ul style="list-style-type: none"> <li>• How would the impact of information provision via a salesperson differ depending on the person themselves?<sup>65</sup></li> <li>• For which products do salespersons have the greatest impact on consumer decision-making?</li> <li>• At which point in the decision-making process does the advice of salesperson have the greatest impact on consumers?</li> <li>• Are particular groups of consumers more susceptible to the advice of salespersons than others?</li> <li>• How could the impact of the information provided by a salesperson be distinguished from the impacts of other factors that influence consumer decision-making?</li> </ul> |

<sup>65</sup> There is evidence that consumers are more likely to trust information from someone that they 'like' than someone they dislike.

### 3.1.1. ANCHORING AND ADJUSTMENT

The influence of anchoring and adjustment on consumer behaviour is seen in Hypothesis 1 and Hypothesis 11. The concept of anchoring explains how nearby comparisons influence consumer choice, which is context dependent. Information is not evaluated independently but is done so in relation to reference points and ‘anchors’. When consumers evaluate product prices, their evaluations are affected these ‘anchors’, against which prices are evaluated. Consumers first anchor the judgement based on some initial value and then adjust the evaluation as they consider additional information.

Anchoring and adjustment is a form of cognitive bias that affects judgments under uncertainty. Sometimes consumers know the value of something, because it has been seen before. Often, however, consumers are not entirely certain. Consumers may have a vague idea, but need additional guidance. Therefore, if given an initial answer or hint, the respondent will use this as an ‘anchor’, adjusting it to reach a more plausible answer, even if the anchor is obviously incorrect.

Therefore, a product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP. This is because consumers will use the RRP as a price anchor and judge the purchase to be more beneficial than if just the sale price was given. Similarly, an energy label that states product energy efficiency compared with other products within the same product group will prompt higher sales of energy efficient products than a label that does not provide comparative information.

Consumer judgements are likely to be influenced by anchoring when buying any products where manufacturers provide retailers with a RRP, and that RRP is displayed at point of purchase, and applies to both durable and non-durable products.

The principles of anchoring are relatively straightforward, however some uncertainties remain. For example, in the real world, sales and product promotions are quite common therefore it is quite possible that several similar items are put ‘on sale’ at the same time to increase competition. Therefore, one of the main uncertainties of anchoring would be to what extent consumers would take into account the *amount* of reduction of the sales prices from the RRP when making the final purchasing decisions.

For example, in Table 6, purchasing the environmentally-friendly product on sale would save the consumer 2.40 €, whereas purchasing the standard product would save only 0.90 € based on the RRP. Nonetheless, the sales price of the standard product costs less than the environmentally-friendly one. Therefore, one uncertainty would include whether consumers would still purchase the more expensive environmentally-friendly product even if the sales price is priced much lower than the product’s higher RRP ‘anchor’ price compared to the standard product? Those consumers who would still purchase the more expensive environmentally-friendly product would very likely purchase them because they would feel like they were getting a better deal on a product that is normally much more expensive and of higher quality, which may also incite consumers to pay a bit more for a

higher quality item. However, how much more a consumer is willing to pay, especially in the long run, is uncertain. See section 3.2.2. for further information on consumer willingness to pay.

**Table 4: Differences in sales prices based on reductions from the RRP**

| Environmentally-friendly dishwashing detergent | Standard dishwashing detergent             |
|--|--|
| Recommended retail price:<br><b>4.80 €</b>     | Recommended retail price:<br><b>3.00 €</b> |
| Sales price:<br><b>2.40 €</b>                  | Sales price:<br><b>2.10 €</b>              |

Uncertainties related to anchoring and adjusting includes:

- An environmentally-friendly product (Product A) and a similar product (Product B) without specific environmental benefits both have sale prices lower than a stated RRP, however the sales prices of Product B is lower than Product A. Would consumers still purchase the environmentally-friendly product (Product A) over Product B?
- How much more is a consumer willing to pay, especially in the long run for environmentally-friendly products?
- How would specific consumer segments in the EU react to this hypothesis?
- Would this hypothesis apply to all types of environmentally-friendly products and services?

### 3.1.2. FRAMING EFFECTS

The way information is presented and consumers' tendency towards loss aversion can have a significant effect on consumer decision-making. Hypothesis 2 explores the effect of framing of information on consumer choice, as well as the impact of loss aversion. An example of how this can be tested is by presenting the **lifetime costs** of using non-energy saving products which will prompt increased purchasing of energy-saving products instead of presenting information on the **lifetime savings** of energy saving products. This particular hypothesis would explore consumer responses when buying different products, but the findings would be applicable to policy associated with services (for example, energy) as well.

The 'framing effect' refers to the difference in response to the same question, when the question is framed in different ways. Consumer choice is largely dependent on the way in which different options or information are framed (or presented).

In the example of Hypothesis 2, framing is combined with loss aversion (the tendency for people to place a higher value on avoiding loss or costs than they do on the benefits of gains), but it could also be applied together with other principles of behavioural economics. For example, for a skin cream, an advertisement could use the slogan ‘more dermatologists choose Product X’. This combines framing with the principle that other peoples’ behaviour matters.

Framing can also be applied to a wide variety of products and services as framing deals largely with peoples’ emotions. Some examples include ‘negative advertising’ in which marketers seek emotional hot buttons – risk of loss, pain, etc. to provoke emotions in consumers<sup>66</sup>. An example of an actual experiment that took place that tests this is seen in the presentation of two problems:

- Problem 1 presents the decision situation in a positive frame by emphasizing that lives can be saved.
- Problem 2, in contrast, presents the very same options in a negative frame by emphasizing that some lives will be lost.

In both of the above options, 200 lives will be saved and 400 will be lost. When confronted with Problem 1 (positive framing) an overwhelming majority of 72 percent chooses this option against Problem 2.<sup>67</sup>

Uncertainties particular to Hypothesis 2 include:

- How would the use of framing affect different consumers based on demographic factors such as cultural contexts, age, gender, etc. in EU?
- Would this hypothesis apply to all types of environmentally-friendly products and services?

### 3.1.3. LOSS AVERSION

Hypothesis 3 investigates the idea of loss aversion in consumers purchasing decisions. Loss aversion refers to consumers placing a higher value on avoiding loss (or costs) than they do on the benefits of gains. For example, when presented with a message that is expressed as a loss, and the other as neutral or as a gain, most consumers will avoid the apparent loss — even if the outcomes are the same<sup>68</sup>. This suggests a tax or surcharge on environmentally-harmful products will have a greater impact on consumer behaviour than an incentive of the same value. Therefore, a way to test Hypothesis 3 is by implementing a 5% surcharge for more environmentally harmful products and making consumers’ aware of this charge,

<sup>66</sup> Dooley, Roger, 2006, “Why Negative Ads Work: Framing, Emotions, and Irrational Decisions” [Available online: [http://www.futurelab.net/blogs/marketing-strategy-innovation/2006/08/why\\_negative\\_ads\\_work\\_framing.html](http://www.futurelab.net/blogs/marketing-strategy-innovation/2006/08/why_negative_ads_work_framing.html)]

<sup>67</sup> Riedl, Arno, 2009, Behavioral and Experimental Economics Can Inform Public Policy: Some Thoughts, CESIFO Working paper No. 2902 [Available online: [http://www.ifo.de/pls/guestci/download/CESifo%20Working%20Papers%202009/CESifo%20Working%20Papers%20December%202009/cesifo1\\_wp2902.pdf](http://www.ifo.de/pls/guestci/download/CESifo%20Working%20Papers%202009/CESifo%20Working%20Papers%20December%202009/cesifo1_wp2902.pdf)]

<sup>68</sup> New Economics forum, 2005, Behavioural economics: seven principles for policy-makers [Available online : <http://economics.hertford.ox.ac.uk/Micro1/Behavioural%20Economics.pdf>]

which will result in a greater decrease in sales of these products than if a 5% cash-back incentive was given for purchasing environmentally friendly products.

Loss aversion means that requiring consumers to pay more for environmentally harmful goods is likely to prove a more effective means of changing consumer behaviour than offering money-back rebates or incentives to encourage the sale of less harmful products, because consumers are likely to find additional taxation more off-putting than a similar-sized incentive.

A recent study shows that a substantial amount of loss aversion can be explained by an individual's age and income, which are important moderators of loss aversion<sup>69</sup>. The study's results show that older people (those with higher levels of income) display greater loss aversion. The study also indicated that for other demographic measures such as gender, results were much more varied in terms of how loss aversion affects decisions. .

Another recent study states that it is unrealistic to expect that consumers will display loss aversion in all circumstances. Thus one uncertainty about loss aversion is to type of transactions can be expected to invoke loss aversion.<sup>70</sup> Other remaining uncertainties of loss aversion include the extent to which loss aversion varies in relevance across individuals. In other words, how important is loss aversion and how does the strength of loss aversion vary depending on the consumer segment, context of the transaction, etc.? Remaining uncertainties for how to actually test Hypothesis 3 include:

- How does the amount of loss aversion vary across individuals?
- How important is loss aversion and for which attributes and consumers?
- How do the means of communication/display of the information to consumers about the 5% surcharge on environmentally harmful products affect their behaviour?
- Does the amount of the tax included change consumer response?
- How would specific consumer segments in the EU react to this hypothesis?
- Would this hypothesis apply to all types of environmentally-friendly products and services?

Additional uncertainties might relate to the way in which loss aversion can be used to motivate behaviour change relating to waste-related behaviours and the idea of 'wasting money' (for example on products with short-life spans)

### 3.1.4. DISCOUNTING

Behavioural economics literature explains that consumers have a tendency to react more to immediate decisions rather than long-term projections. Such tendencies can also be

<sup>69</sup> Johnson, Eric, et al., 2006, Exploring the nature of loss aversion, CeDEx Discussion Paper No. 2006–02

<sup>70</sup> GHK et al., 2010, Behavioural economics & energy using products: scoping research on discounting behaviour and consumer reference points, Report for Defra [Available online: [http://randd.defra.gov.uk/Document.aspx?Document=EV0701\\_9169\\_FRP.pdf](http://randd.defra.gov.uk/Document.aspx?Document=EV0701_9169_FRP.pdf)]

referred to as present-biased preferences. In other words, when considering trade-offs between two future moments, present-biased preferences give stronger relative weight to the earlier moment as it gets closer<sup>71</sup>.

Hypothesis 4 aims to investigate further the concept of discounting. Consumers often struggle with the complexity of translating reduced energy consumption into a saving and place greater emphasis on short-term benefits over long-term costs. Making running costs more salient helps consumers consider these costs during decision-making. A way to test this hypothesis is by including both energy rating and annual operating costs in an energy label (instead on including energy performance only), which will result in greater sales of the more energy efficient products. Currently, in most cases, the EU's energy label does not include running costs but provides information on energy performance based on energy consumption and the amount of CO<sub>2</sub> emissions emitted.

The nature of energy using products means that consumers are subject to fewer emotional influences than when buying other products. Therefore, consumers tend to think of energy-using products in terms of their use, price and efficiency. Environmental improvements tie in to consumers' desires to maximise their cost savings because higher environmental performing products will result in lower long term running costs. Economic performance (due to product efficiencies and lower running costs) is closely linked to environmental performance (as environmental performance usually requires greater product performance and less use of resources during operation). Therefore, including running cost information (costs of electricity use, possible taxes, maintenance and repair costs, etc.); on energy labels in Euros would provide consumers with a clear context to compare the energy efficiency of different appliance models. It would also help consumers assess trade-offs between the energy costs of their appliances and other expenditures.

Uncertainties of discounting include:

- How does the time-frame affect consumer behaviour when discounting?
- Would displaying running costs at an even shorter term such as weekly or monthly running costs (rather than annual costs) have different impacts on predicted consumer behaviour?
- What would be the effect on consumers if running costs were displayed over the expected lifetime of the product?
- Does the impact of framing and/or discounting vary across different consumer segments and demographics?

### 3.1.5. SALIENCE OF PRODUCT INFORMATION

Information related to policy instruments can have a greater influence when the information is made more salient during the moment of purchasing decisions. This can also be applied to policy instruments such as taxes and other financial instruments (e.g.

<sup>71</sup> O'Donoghue Ted and Matthew Rabin, 2009, Doing It Now or Later [Available online: [www.uibk.ac.at/economics/bbl/lit\\_se/lit\\_se\\_ss06\\_papiere/now\\_or\\_later.pdf](http://www.uibk.ac.at/economics/bbl/lit_se/lit_se_ss06_papiere/now_or_later.pdf)]

immediate cash-back, rebates). Studies on behaviour have shown that behaviour is greatly influenced by what our attention is drawn to. For example, people are more likely to register stimuli that are novel (messages in flashing lights), accessible (items on sale next to checkouts) and simple (a snappy slogan)<sup>72</sup>.

Therefore, efforts to make taxes of environmentally-damaging products more salient to consumers are likely to result in those taxes having a greater impact on decision-making. Hypothesis 5 investigates the salience of tax further. An example of how this hypothesis might be tested is to run experiments to determine whether a product with a label that explicitly states the VAT included in the price will result in fewer sales than a product with the same total price (but without a label that explicitly states the VAT included).

An example of rendering taxes salient for consumers is seen in a recent US experiment. Researchers chose 750 products subject to a sales tax that is normally only applied at the check-out register, and put additional labels next to the product price, showing the full amount including the tax. Figure 10 displays how the price-tags were presented to consumers during the experiment. Including a tax on the label, rather than adding it during check-out led to an 8% fall in sales over the three-week experiment<sup>73</sup>. The study explains these results through two explanations: (1) Consumers are uninformed about the sales tax rate or the set of goods subject to the sales tax, therefore displaying the tax-inclusive price tags may have provided new information about tax rates, leading to a reduction in demand, and (2) most individuals do not compute the tax-inclusive price when shopping, and focus instead on the salient pre-tax price.<sup>73</sup> Other explanations for the results of this study could also point to anchoring and loss aversion in that consumers would anchor to the sales price (before taxes) and thus are dissuaded from purchasing the product when they see the full price of the product with taxes included.

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<sup>72</sup> Institute for Government, UK, 2009, MINDSPACE: Influencing behaviour through public policy, [Available online: [www.instituteforgovernment.org.uk/images/files/MINDSPACE-full.pdf](http://www.instituteforgovernment.org.uk/images/files/MINDSPACE-full.pdf)]

<sup>73</sup> Chetty, Raj et al., 2007, Salience and Taxation: Theory and Evidence, National Bureau of Economic Research Working Paper No. 13330





**Figure 10: Tax-inclusive price tags used during US experiment<sup>73</sup>**

Some of the uncertainties that remain include:

- How can the salience of tax be most effectively communicated so that consumers choose environmentally-friendly products over their more harmful counterparts?
- What would be the most effective ways to make tax salient to consumers?
- What would the impact of salience be for other consumer policy instruments such as financial incentives or labels?
- How would specific consumer segments in the EU react to this hypothesis?
- For which products, would this hypothesis be relevant for? How would the salience of tax vary across product groups?

### 3.1.6. THE INFLUENCE OF 'FREE'

Hypothesis 6 explores the idea that consumers respond more to price reductions when they signify that something becomes 'free' rather than when the price reduction results in a seemingly insignificant cost remaining.

A way to test this hypothesis might be to conduct an experiment which zero-rates an annual vehicle tax on the least polluting vehicles. A prediction of results is that it would result in more sales of these vehicles than if the same saving is offered as an annual cash-back. This is because consumers like getting something for 'free'. Ariely explains that free gives consumers such an emotional charge that they perceive what is being offered to be more valuable than it really is<sup>74</sup>. This is because free is tied to the idea that humans are intrinsically afraid of loss. When we choose a free item, there is no visible possibility of loss. Some real life examples include free shipping from online retailers, or buying two products

<sup>74</sup> Ariely, Dan, 2008, Predictably Irrational, Chapter 3: the Cost of Zero

for the price of one (indicating that one of the products is being offered for free). Both examples have been successful in terms of influencing consumers.

Making something free rather than offering a discount can result in much more significant impacts. For example, for hybrid vehicles or more environmentally-friendly vehicles, it may be more effective to provide something ‘for free’ than offering a discount or rebate. This is because, in some cases involving intrinsic motivations, a financial reward would be thoroughly de-motivating to continuing the behaviour. Intrinsic motivation is when we do activities for their own inherent reward and extrinsic motivations are when we do things for some external (possibly financial) reason. It is possible for extrinsic motivations to ‘crowd-out’ intrinsic motivations and thus be counter-productive, meaning that financial rewards, deadlines, and the threat of punishment can decrease intrinsic motivation and thus can be counter-productive as motivational tools<sup>75</sup>. For example, in volunteer work, money can be de-motivating, as it detracts from the sense of wellbeing of having done something good.

An experiment was conducted to test the influence of free within the context of Ariely’s work<sup>76</sup>. Three different options were proposed. All options are equivalent in costs in that consumers would all spend \$5. Nonetheless, results of the experience show a dramatic preference of consumers for the 3<sup>rd</sup> option: being offered the product for free and paying \$5 for shipping, as shown in Table 7.

**Table 5: Influence of free**

| Product       | Shipping      |
|---------------|---------------|
| \$ 5.00       | <b>FREE !</b> |
| \$ 2.50       | \$ 2.50       |
| <b>FREE !</b> | \$ 5.00       |

Uncertainties that remain include following aspects:

- How can the influence of ‘free’ be used to market other environmentally-friendly goods?
- Does the influence of ‘free’ vary across different product groups? If so, to what extent?
- How does the communication of ‘free’ affect its influence?

<sup>75</sup> New Economics forum, 2005, Behavioural economics: seven principles for policy-makers [Available online : <http://economics.hertford.ox.ac.uk/Micro1/Behavioural%20Economics.pdf>]

<sup>76</sup> Ariely, Dan, 2008, Predictably Irrational, Chapter 3: the Cost of Zero

- How could framing be used to affect the way consumers perceive different ‘free’ options?
- How would specific consumer segments in the EU react to this hypothesis?
- Would this hypothesis be relevant for another other product groups and tax regime?

### 3.1.7. ENDORSEMENT

Endorsement is often used as a policy tool in the form of labels. Chapter 2 gave a brief introduction to the influence of endorsement and how the different types of endorsements can affect consumer choice. Endorsements for the promotion of environmentally preferable products and services can come from a wide variety of different actors such as government (e.g. ministry of environments, standards organisations), independent bodies (NGOs, non-profits, consumer associations, research institutions, experts), private organisations and industries, celebrities, and other consumers. The influence of endorsements on consumer behaviour is seen in Hypotheses 6, 7, 8, 9 and 10 (see Table 3 for a description of these hypotheses). Uncertainties underlying these hypotheses include the following aspects:

- The types of products for which endorsements would be most effective.
- The consumer segment for which the different types of endorsements would be most effective.
- The extent of recognition of endorsers by consumers (this will most likely differ according to country and product).
- The extent that labels endorsed by other bodies such as government, retailers or celebrities impact consumer choice.

In the following sections, further research is carried out into how the use of endorsements coming from particular actors influence consumer choice and underlining uncertainties.

#### ■ Influence of peers and other consumers

The influence of other consumers as a driver of consumer behaviour is seen in Hypotheses 12 and 13. Neoclassical economics gives little significance to the influence of the behaviour of others because the rational consumer makes decisions independent of others. However, findings from psychology, sociology and behavioural economics suggest otherwise and argue that people are often influenced by the opinions and advice of others, especially from people in authority or people that are liked. *One cumulative impact of social influence is ‘social learning’, a process by which individuals subconsciously take in the behaviour of others to learn how to behave*<sup>77</sup>.

<sup>77</sup> New Economics forum, 2005, Behavioural economics: seven principles for policy-makers [Available online : <http://economics.hertford.ox.ac.uk/Micro1/Behavioural%20Economics.pdf>]

Consumer decision-making can therefore be influenced by information about product sales, for example in the form of a label that states ‘99% of consumers bought this energy efficient boiler’ or ‘This is this store’s best selling energy efficient television’. Most research agrees that communities, family and friends play a key role for consumers as a source of information and advice on purchasing products and services. Nielsen recently surveyed over 25,000 consumers online across more than 50 markets from EU, Asia Pacific, the Americas and the Middle East on their attitudes toward trust, value and engagement of advertising<sup>78</sup>. The survey results indicate that recommendations from personal acquaintances or opinions posted by consumers online are the most trusted forms of advertising. Another study investigated consumers’ usage of online recommendation sources and their influence on online product choices. Results of the investigation indicated that subjects who consulted product recommendations selected recommended products twice as often as subjects who did not consult recommendations<sup>79</sup>.

Despite the research that points to the influence of peers and other consumers on consumer choice, uncertainties remain relating to:

- How consumer endorsement can be most effectively displayed to influence the greatest number of consumers;
- The differences that might arise from the use of product sales information online versus in-store;
- How word-of-mouth advice and endorsements are most effectively shared by consumers; and
- At what point in the purchasing process the influence of other consumers is most likely to affect decision-making.

#### ■ Influence of sales persons

Similar to being influenced by peers and other consumers, consumers are also influenced by salespersons, which Hypothesis 14 further investigates. Consumers interact with retail salespeople on a regular basis for purchases across a wide range of products and services. Consumers are particularly susceptible to the impact of salesperson recommendations when buying products possessing ‘experience’ qualities (i.e. those which cannot be experienced until post-purchase) or those products requiring technical or complex knowledge such as vehicles, computers, or electrical products<sup>80</sup>.

Research has also highlighted that the behaviour of the salesperson is a significant factor contributing to the success or failure of the sales encounter and that consumers at different phases of the decision making process are likely to view the role of the

<sup>78</sup>Nielsen, 2009, July 2009, Nielsen Global Online Consumer Survey Trust, Value and Engagement in Advertising [Available online: <http://pl.nielsen.com/trends/documents/NielsenTrustAdvertisingGlobalReportJuly09.pdf>]

<sup>79</sup> Senecal and Nantel, 2004, The influence of online product recommendations on consumers’ online choices, *Journal of Retailing*, pp.159–169

<sup>80</sup> PSI et al., 2009, Designing policy to influence consumers: Consumer behaviour relating to the purchasing of environmentally preferable goods. Report for the European Commission

salesperson differently<sup>81</sup>. A recent study looked into specific influence strategies that salespersons use to persuade consumers<sup>81</sup>. In particular, five principles on influence are of particular interest in the case of salespersons: authority, social validation, scarcity, liking, and reciprocity.

Table 8 describes these influence strategies and in further detail.

**Table 6: Influence strategies that can be used by sales persons**

| Influence strategies     | Description and examples  |
|--------------------------|---|
| <b>Authority</b>         | In a decision-making context, consumers often seek the advice of experts in order to help them make effective decisions or reinforce decisions. In the domain of interpersonal selling, salespeople, often attempt to position themselves as authorities on a specific type of product and often make a point to stress the reputation they have gained as the 'main authority in the area'.                                    |
| <b>Social Validation</b> | In a consumer behaviour perspective, consumers frequently look to what others have purchased in order to reinforce their decision to make a purchase. A tactic used by salespersons to use social validation principles include for example is the 'best seller' to reassure consumers that he or she is purchasing the best selling model on the market.   |
| <b>Scarcity</b>          | The idea of potential loss (loss aversion) plays a large role in human decision making. Hence scarcity of a product (products that are difficult to possess) can be viewed by consumers as being 'better' than those that are easy to possess. Advertisers and salespeople commonly make use of the principle by offering items for a limited time, or by stating that there is a limited number of a specific product.         |
| <b>Liking</b>            | Individuals are more inclined to comply with a request if they like the person making the request, therefore tactics and methods have been developed to promote liking using physical attractiveness, similarity, compliments, and cooperation. In a consumer/salesperson interaction, whether or not a consumer likes a salesperson may be a factor in determining if the interaction continues.                               |
| <b>Reciprocity</b>       | The principle of reciprocity explains that people feel obligated to return just about anything, e.g., gifts, favours, threats, services. In a selling context, a salesperson indicates to a customer that a desired model is not in stock but that he would be happy to see if he can get the model from another dealer, which activates the 'repayment of favours' heuristic and can make the consumer more willing to comply. |

<sup>81</sup> Mallalieu, Lynnea, 2000, An Examination of the Influence of Consumer Motivation on Salesperson Appraisal and Emotional Response to Salesperson Behaviour, [Available online:[scholar.lib.vt.edu/theses/available/etd-02252000-10540041/unrestricted/lynnea.pdf](http://scholar.lib.vt.edu/theses/available/etd-02252000-10540041/unrestricted/lynnea.pdf)]

Research and real life experience shows that salespersons can effectively influence consumer choice, however there are still many aspects of an encounter that need to be explored more thoroughly. Some of the remaining uncertainties that underlie this hypothesis on the influence of salespersons include:

- How can a sales person use a specific influence strategy to influence a consumer's purchasing decision?
- Are particularly groups of consumers more susceptible to a certain influence strategy of salespersons than others?
- At which point in the decision-making process does the advice of salesperson have the greatest impact on consumers?
- How to measure the impact of the information provided by a salesperson by distinguished from the impacts of other factors that influence consumer decision-making?

#### ■ Influence of government

The influence of government as a driver of consumer behaviour is seen in Hypotheses 8 and 9. As has already been mentioned, consumer trust in government is limited. This is due to 'psychological reactance', which explains that whenever it becomes clear that someone is trying to persuade us of something, we instinctively take the opposing view<sup>82</sup>. Furthermore, it is difficult to measure consumer trust in government because public opinion about governmental institutions is very inconsistent and ambivalent, characterized more by cognitive complexity than by consistency<sup>83</sup>.

A recent study was conducted on public trust in government, under the auspices of the Norwegian Power and Democracy Study in 2001. A major findings of the study that help to gain further understanding of the uncertainties related to consumer perception of government include that idea that *political-cultural variables* have the strongest overall effect on variation in people's trust in government. This means that integration, involvement and engagement of citizens in the political system and the political administrative culture have a significantly higher level of trust in most governmental institutions than people who are less integrated, involved and engaged. Outsiders and people who are politically distant, in an ideological sense, from public institutions have less trust in those institutions<sup>83</sup>.

Demographic factors also have an influence on levels of trust in governmental institutions. For example, people employed in the public sector generally have more trust in government than people without such affiliation, and people with higher education have

<sup>82</sup> Halpern D et al., 2004, Personal Responsibility and Changing Behaviour: the state of knowledge and its implications for public policy, Cabinet. [Available online: <http://cdi.mecon.gov.ar/biblio/docelec/dp4105.pdf>

<sup>83</sup> Christensen, Tom and Per Lægreid, 2002, Trust in Government – the Relative Importance of Service Satisfaction, Political Factors and Demography. Stein Rokkan Centre for Social Studies, Bergen University Research Foundation [Available online: <http://www.ub.uib.no/elpub/rokkann/N/N18-02.pdf>]



generally have more trust than less educated people<sup>84</sup>. Age also has an effect, whereby older people generally have more trust in governmental institutions than younger people. Authority is a familiar and strong social force and people will readily comply with authority that they consider legitimate<sup>84</sup>. Therefore, it is important that governments boost their authority and minimise psychological reactance in the public by strengthening the independence of key sources of public information and guidance — such as agencies responsible for food, drugs, statistics or financial services. This increases legitimacy and perceived expertise.

Another study concluded that although a wide range of organisations disseminate information on products, government endorsement alone is not sufficient endorsement in terms of consumer trust as some consumer groups are not in favour of government policies. Instead, the study suggests that a semi-governmental entity funded by the government and staffed with informed but independent scientists would be the best possible source to provide information on products<sup>85</sup>.

Despite the importance and power of governments to influence consumer choice, it is important to consider the fact that the way governments are perceived by consumers vary from country to country. Further research is thus necessary to be able to analyse how consumer trust in government differs across the EU and how this might impact consumer response to government backed environmental information and policy.

Other uncertainties include:

- Are there certain types of consumers that would be more or less influenced by government intervention?
- How should information on government support and endorsement be effectively conveyed? Through awareness campaigns? Through in-store poster displays placed by the reduced price products?
- For which types of products would government endorsement be most effective?
- Will consumers who feel that the environment is the responsibility of the government be dissuaded to purchase the product with a reduced due to government intervention?
- How would a label with a comparative system integrated with other types of endorsement such as consumer endorsement or endorsement from an independent body influence consumer behaviour?
- What would be the effects of increased transparency and reliability at a national level? What would be the impact of government involvement in this type of initiative?

<sup>84</sup> Christensen, Tom and Per Lægheid, 2002, Trust in Government – the Relative Importance of Service Satisfaction, Political Factors and Demography [Available online: [bora.uib.no/bitstream/1956/1420/1/N18-02%5B1%5D.pdf](http://bora.uib.no/bitstream/1956/1420/1/N18-02%5B1%5D.pdf)]

<sup>85</sup> Schneider, F.A et al. (2009), “How can consumer trust in organic products be enhanced?” Paper presented at the Eurosafe Conference 2009.

## ■ Influence of independent bodies and third parties

The impact of endorsement from an independent third party is investigated in Hypothesis 7. Consumers struggle with complexity and therefore seek the endorsement of independent bodies that they trust as a way of cutting through complexity. Chapter 2 explained that endorsements from well known and respected organisations are highly valued by consumers and that in some cases, simple seal-of-approval logos and labels have generally affected consumer behaviour more than the complex information-disclosure labels.<sup>86</sup> Studies have shown that endorsement from scientists' environmental groups and friends and family are among the most trusted sources of environmental information, whereas government, business, the media and celebrities all feature low in the trust list<sup>87</sup>.

In a specific study, two experiments were carried out to compare the impact of endorsements coming from independent bodies and from celebrities for desktop computers and auto insurance<sup>88</sup>. Overall, the study concludes that independent endorsers such as trusted NGOs, are more effective in influencing consumer choice than celebrity endorsers because of the way they influence consumers' perception of the product or service. Independent endorsers influence consumers through a process of internalisation, which occurs when a consumer adopts an attitude or purchases a product because it is *useful* for the solution of a problem. Independent endorsers are perceived to have credible information that may be used to solve the consumer's problem. This aspect could be particularly relevant for products for which the consumer has little technical knowledge on such as health products (i.e. medicines, electronics, cars, etc.). On the other hand, celebrity endorsers persuade through the process of identification, which occurs when the consumer adopts a certain attitude or purchases a specific product when it is consistent with his or her self-definition or reference group image. This could be relevant for products such as clothes and luxury items such as perfumes and jewellery<sup>89</sup>. As this was not a recently published study, it would be interesting to re-test the study's findings.

Uncertainties related to this hypothesis include:

- For which products would endorsements of independent bodies be more effective in influencing consumer choices?
- Which independent bodies endorse labels that could be considered widely-recognised? This will most likely differ according to country and product.
- Would this hypothesis be more relevant for a specific consumer segment?

<sup>86</sup> Banerjee Abhijit et al., (2003), Eco-labeling for energy efficiency and sustainability: a meta-evaluation of US programs, *Energy Policy* 31 (2003) 109–123

<sup>87</sup> Consumers International (2007), What assures Consumers on Climate Change ?

<sup>88</sup> Hoeke, Stuart A. (1989), "Two-sided versus one-sided celebrity endorsements: the impact on advertising effectiveness and credibility". *Journal of Advertising*, Wednesday, March 22 1989

<sup>89</sup> Hoeke, Stuart A. (1989), "Two-sided versus one-sided celebrity endorsements: the impact on advertising effectiveness and credibility". *Journal of Advertising*, Wednesday, March 22 1989



### ■ The influence of endorsement on specific products

There are very few existing academic studies that have examined the effects of different types of endorsements that compare products and services. Nevertheless, some information has been identified on the impact of certain endorsements on specific types of products. One example of the influence of endorsers on specific products is seen through a study, which examined the concept of consumer trust in organic foods<sup>90</sup>. The study finds that consumer trust is very important when buying organic foods because consumers generally cannot distinguish organic products from conventional ones by their appearance or taste. Organic products and other foods with environmental claims have a high degree of ‘credence attributes’, which are not directly observable by consumers. This is in contrast to ‘search attributes’ which can be discerned by consumers before purchase (e.g. price, colour and size), and ‘experience attributes’ which can be verified after purchase (e.g. taste and shelf life). Therefore, because of the credence attributes of foods with environmental claims, policy tools such as endorsement labels could provide the reassurance needed for consumers to trust the environmental qualities of the product.

## 3.2. OTHER INFLUENCES ON CONSUMER BEHAVIOUR

This section analyses other general decision-making factors of consumer behaviour that can affect consumer purchasing decision and which can also be relevant to the hypotheses. Some of these other drivers address the environment and context of consumer choice at the point of purchase. These factors include for example consumer segmentation (i.e. influence of culture, demographics that form specific consumer groups), context of choice (online vs. in-store shopping), and display of information (influence of how information is physically presented to consumers). These aspects are important to take into account in order to reflect as accurately as possible the wider reality of consumer choice. The uncertainties and drivers discussed in the previous and following section will be considered when developing the guidelines to run research trials based on the hypotheses.

### 3.2.1. CONSUMER SEGMENTATION

The assumption that consumers that share certain attributes tend to behave in similar ways is the driving force behind the concept of consumer segmentation. By grouping consumers into segments according to different variables, researchers and policy-makers hope to be able to accurately predict and influence the consumers’ behaviours. The variables which are identified as relevant are not drivers *per se* — i.e. it is not presumed that there is a causal link between the variable and the behaviour — but rather predictors of behaviour which can be useful in the design and implementation of policy.

There are several approaches to grouping consumers into identifiable segments with each having its own advantages and disadvantages in terms of data availability, predictive

<sup>90</sup> Schneider, F.A et al. (2009), “How can consumer trust in organic products be enhanced?” Paper presented at the Eurosafe Conference 2009.

power, etc. The most common criteria for constructing consumer segments are summarised in Table 9.

**Table 7: Segmentation criteria<sup>91</sup>**

| Typology   | Elements  | Possible inputs (variables)   |
|--|---|---|
| <b>Geographic / demographic / socio-economic</b>         | Based on who and where people are and level of income / affluence                         | <ul style="list-style-type: none"> <li>• Postcode, street, area, region</li> <li>• Urban vs. rural</li> <li>• Age</li> <li>• Gender</li> <li>• House type /ownership</li> <li>• Household composition</li> <li>• Family lifestage</li> <li>• Education</li> <li>• Working status</li> <li>• Income</li> <li>• Social class</li> </ul>   |
| <b>Behavioural</b>                                       | Based on what people do, where and when they do it, and perceptions of what they might do | <p><b>Behaviour and usage:</b></p> <ul style="list-style-type: none"> <li>• Frequency / extent of use</li> <li>• Persistency (loyalty)</li> <li>• Place</li> <li>• Time</li> <li>• Occasion</li> <li>• Convenience</li> </ul> <p><b>Activities and interests:</b></p> <ul style="list-style-type: none"> <li>• Community interests</li> <li>• Lifestyle (e.g. activities, interests, leisure, hobbies)</li> <li>• What money is spent on</li> </ul> <p><b>Media consumption:</b></p> <ul style="list-style-type: none"> <li>• Source of most information</li> <li>• Internet usage</li> <li>• TV, radio, press</li> <li>• Access to media</li> <li>• Access to local information</li> </ul> |
| <b>Psychographic (values, attitudes and motivations)</b> | Based on how (and why) people think and feel the way they do                              | <p><b>Beliefs:</b></p> <ul style="list-style-type: none"> <li>• Beliefs, values, aspirations</li> <li>• Political orientation</li> <li>• Perceived effectiveness</li> <li>• Altruism</li> <li>• Environmental concern</li> <li>• Attitude towards life, work, family and friends</li> </ul> <p><b>Influencers:</b></p>  |

<sup>91</sup> Brook Lyndhurst (2009) Household waste prevention evidence review: Consumer segmentation. A report for Defra's Waste and Resources Evidence Programme.

| Typology | Elements | Possible inputs (variables)  |
|----------|----------|--|
|          |          | <ul style="list-style-type: none"> <li>• Who they do and don't listen to</li> <li>• Who they respect</li> <li>• Role models</li> </ul> |

Traditionally, consumer segmentation has focused on socio-demographic variables summarised in the first line of Table 9. These variables are easy to collect and, as a result, allow for easy comparisons to be made across different studies, geographical settings, and time.

However, the usefulness of these traditional metrics in predicting ecologically conscious consumer behaviours has been called into question recently. While socio-demographic data is easy to collect, different studies using this type of data have produced highly variable and often contradictory results. An alternative may be found in the behavioural and psychographic variables summarised in the final two lines of Table 9. Research has shown that these variables may have greater predictive power, suggesting that they can be more useful measures in the design of policy.<sup>92</sup>

Furthermore, to overcome the shortcomings of the individual typologies, hybrid approaches can be created which combine, for example, both behavioural and psychographic variables. Defra's Framework for Pro-Environmental Behaviours is an example of this approach. In this case, British consumers were segmented based on their stated ability and willingness to act in an ecologically conscious manner. While socio-demographic information such as income and education levels were collected as well, their use was limited to descriptive and not predictive purposes. Following this methodology, Defra was able to create seven segments representing different attitudes towards pro-environmental behaviours. See for Defra's environmental segmentation model.

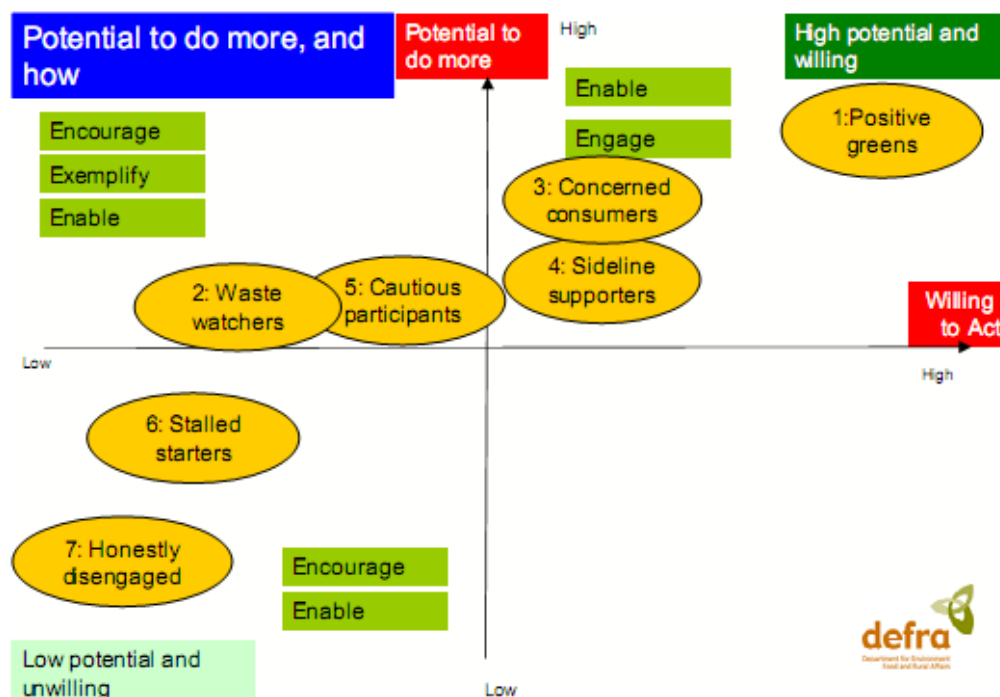
This approach is particularly useful from a policy-making perspective, as the policy instruments that will be most likely to influence the consumers varies from segment to segment. As such, it may be possible to more accurately target particular policies based on the desired outcome and target segment.

The extent to which Member State-specific models, such as Defra's, can be generalised throughout the EU is a question which requires further attention. The inherent diversity of the EU presents challenges to researchers and policy-makers attempting to create useful consumer segmentation models. It will be important to consider population and demographic trends across the EU and how this might affect future consumer policies. For example, a recent report shows that the age structure in OECD countries is changing and will continue to evolve<sup>93</sup>. Notably, the percentage of consumers aged 65 and older has significantly increased, whereas younger consumers have declined. Therefore, aspects such

<sup>92</sup> Straughan, Robert D., and James A. Roberts, 1999, Environmental Segmentation Alternatives: A Look at Green Consumer Behaviour in the New Millennium. *Journal of Consumer Marketing*. Vol. 16, no. 6, pp. 558-575.

<sup>93</sup> OECD, 2010, Consumer Policy Toolkit, [Available online: <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9310011E.PDF>]

as how to include measures to address the elderly consumer segment in terms of protection and assisting them in making good choices will need to be considered.



**Figure 11: Defra environmental segmentation model, showing potential by segment and main emphasis for interventions**

### 3.2.2. THE CONCEPT OF 'INNOVATIVENESS'

Some research has been carried out on the consumer innovativeness concept, which characterises consumers with a 'predisposition to buy new and different products and brands rather than remain with previous choices and consumer patterns'.<sup>94</sup> One recent article explains four main reasons why certain consumers have such a predisposition: (1) need for stimulation, (2) novelty seeking, (3) independence toward others' communicated experience and (4) need for uniqueness. This concept can be quite relevant for environmentally-friendly goods, as for many consumers these types of goods are considered to be new and could thus help people maintain their need for novelty seeking or in order to feel unique. Novelty seeking usually motivates the consumer search for new information and display new product buying behaviour.

An example of how novelty seeking affects consumers is seen in travel, as oftentimes the search for new experiences is a key motivator in the reason people travel. Researchers have stated that vacationers taking novel trips (those to places that are not familiar) seek

<sup>94</sup> Roehrich, Gilles, 2004, Consumer innovativeness Concepts and measurements, Journal of Business Research, [Available online: [www.infres.enst.fr/wp/projetpanic/files/2009/12/sdarticle.pdf](http://www.infres.enst.fr/wp/projetpanic/files/2009/12/sdarticle.pdf)]

more advice on the destination and spend more time and money during the trip than do travellers who take more commonplace trips<sup>95</sup>.

Despite the research that exists on innovativeness, there is no consensus on the exact definition and roots of innovation and its influence on consumers. Uncertainty also exists on how to measure the impacts of innovation on consumers. For example, it is not clear whether a 'yes' at one level would be equivalent to a 'yes' at another level. Innovativeness dimensions can be measured at a:

- General level for which any kind of newness (products, ideas, behaviours, etc.) is concerned,
- Product level, which concerns items that are about innovations or new products and;
- Domain-specific level, where items are about new products in a specific product category<sup>96</sup>.

### 3.2.3. CONSUMER WILLINGNESS TO PAY

More often than not, environmentally-friendly products and services are more expensive than their less environmentally-friendly counterparts. Therefore, many marketers of environmentally-friendly goods and services have tried to target the consumer segment willing to pay the extra price for environmentally-friendly products. Several studies, dating back to the early 1970s have looked into this issue. Most of these studies agree that the socially and environmentally conscious is majority female, pre-middle aged, with a high level of education (finished high school) and above average socioeconomic status<sup>97</sup>.

A more recent study in 2001 re-tested these findings and found that among the eight demographic variables studied, 'gender', 'marital status' and 'number of children living at home' differentiated the two consumer segments tested. Therefore, the consumer segment most willing to pay more for environmentally-friendly products consisted of females, individuals who are married, and have children living at home. The study concludes that the environmentally conscious consumer is more inclined to think of how a degraded environment may negatively impact not only on their partner, but on their children's future and could be a strong motivation for married couples to behave in an ecologically conscious fashion<sup>98</sup>.

<sup>95</sup> Strategic Travel Action Resource, 2003, The Psychology of Travel – Consumer Behaviour, 2003 [Available online: [www.ntaonline.com/includes/media/docs/psychtravel-consumer.pdf](http://www.ntaonline.com/includes/media/docs/psychtravel-consumer.pdf)]

<sup>96</sup> Strategic Travel Action Resource, 2003, The Psychology of Travel – Consumer Behaviour, 2003 [Available online: [www.ntaonline.com/includes/media/docs/psychtravel-consumer.pdf](http://www.ntaonline.com/includes/media/docs/psychtravel-consumer.pdf)]

<sup>97</sup> Laroche, Michel et al., 2001, "Targeting consumers who are willing to pay more for friendly products", Journal of Consumer Marketing, Vol. 18, No. 6, pp. 503-520 [Available online: [educamarketing.unex.es/assignaturas/cursos%20doctorado/art%C3%ADculos/green%20consumer\\_laroche%20et%20al.pdf](http://educamarketing.unex.es/assignaturas/cursos%20doctorado/art%C3%ADculos/green%20consumer_laroche%20et%20al.pdf)]

<sup>98</sup> Laroche, Michel et al., 2001, "Targeting consumers who are willing to pay more for friendly products", Journal of Consumer Marketing, Vol. 18, No. 6, pp. 503-520 [Available online: [educamarketing.unex.es/assignaturas/cursos%20doctorado/art%C3%ADculos/green%20consumer\\_laroche%20et%20al.pdf](http://educamarketing.unex.es/assignaturas/cursos%20doctorado/art%C3%ADculos/green%20consumer_laroche%20et%20al.pdf)]

Finally, a study by RSA published in 2009, also found similar results: the environment is of greater importance to consumers across all countries for consumers that are: older, highly educated and female. Compared to their male counterparts, women were typically anywhere between 5%–20% more concerned about environmental issues and the corporate products and services which help them reduce their impact<sup>99</sup>.

In terms of *how much more* consumers were willing to pay for environmentally-friendly products, for most countries, respondents were willing to pay 1–5 % premium for a product or service that is more environmentally friendly. However, the more developed countries (Canada, Denmark, France, Germany, Sweden, UK) showed less inclination to pay a premium, compared with those in the emerging markets (China, UAE, Chile), with France leading the number of people not prepared to pay a premium. Despite the existence of some studies that investigate consumer willingness to pay for environmentally-friendly products and services, further research is needed on the willingness to pay for the different consumer segments of European populations to gain more detailed insights.

### 3.2.4. CONTEXT OF CHOICE

The location and the situation in which consumer choices occur directly and indirectly influence the consumer's ability to evaluate the choices available to them and, ultimately, the final purchase decision. In particular, the context of a particular purchasing decision may affect the consumer's ability to obtain information concerning the available options, the actions of other consumers present may exert powerful social influence on any individual consumer, and subtle cues in the purchasing environment may affect the final purchasing decision. Taken together, these effects make the context of choice an important variable in consumers' purchasing of goods and services with environmental impacts.

Recent trends point to the growth of the Internet as a major venue for purchasing and research into products and services. More and more consumers are turning to online shopping or e-commerce for their purchasing needs due to greater choices and convenience. In this environment, consumers are confronted with both more options for a particular service as well as more information to potentially guide their choice, if it can be usefully filtered.

Consumer decision-making can generally be conceptualised as a 'mixed' choice task situation wherein consumers make their choices using prior information already available in their memories, as well as information they obtain from the external environment. To the extent that consumers are unable to find relevant information in their external environment — both online and offline — consumers will rely more on their prior information.<sup>100</sup> In this case, the mental short-cuts discussed in Section 3.1. are likely to

<sup>99</sup> RSA, 2009, Green Appetites: Global Attitudes to Sustainable Business Practices Report [Available online: [www.rsagroup.com/rsa/uploads/documents/Green\\_appetites.pdf](http://www.rsagroup.com/rsa/uploads/documents/Green_appetites.pdf)]

<sup>100</sup> Degeratu Alexandru M et al., "Consumer Choice Behavior in Online and Traditional Supermarkets: The Effects of Brand Name, Price, and Other Search Attributes," *International Journal of Research in Marketing*, Vol.17, No.1, p.55-78.

have a greater influence on purchasing decisions. For example, the 'halo effect', whereby consumers infer attribute values based on their overall evaluations of that product (e.g. Product X is generally of high quality, therefore it must have a particular positive attribute Y) allows consumers to reach a decision in an information-constrained environment.

While information to assist consumers in making well-informed decisions may be abundantly available, especially in online shopping environments, this information must be made useful for consumers in order for it to be incorporated into their decisions. While the impact of the display of such information is discussed in more detail in Section 3.2.5. below, it is worth comparing the differences between online and offline shopping environments here.

### ■ Online shopping

Online shopping environments are characterised by a great number of available choices for a particular product and service, as well as a much greater breadth and depth of information than consumers would have available in traditional shopping environments. From detailed product information provided by manufacturers to thorough product reviews by amateur and professional reviewers, the challenge of online environments is not the availability of information, but rather its usefulness.<sup>101</sup>

In order to process this great quantity of information and make it useful to consumers, numerous tools have been developed to aggregate product information, peer reviews, and professional reviews, all with the objective of making the great quantity of information available to consumers useful and relevant.

Recently, efforts have been made to develop online tools to help consumers make well-informed decisions based on the environmental attributes of products.<sup>102</sup> The development of these and similar tools suggests that the developers perceive consumer interest for a holistic and comparable indicator of environmental information for the products which they are seeking to purchase online.

### ■ In-store purchases

In comparison to the information-rich environment presented by online shopping where the organisation, aggregation, and summarisation of information is key, in-store shopping can present consumers with a relatively information-poor environment, where other priorities may take precedence. In particular, it has been observed that brands carry greater weight in final purchasing decisions made in-store and that the social influence of other shoppers can be quite strong. As the total amount of information available concerning a particular product or service is reduced in in-store environments, consumers must rely on other indicators to guide their purchasing decision. As such, the relative

<sup>101</sup> [http://analogik.com/article\\_analysis\\_of\\_consumer\\_behaviour\\_online.asp](http://analogik.com/article_analysis_of_consumer_behaviour_online.asp)

<sup>102</sup> For example, Topen.info is a consumer-oriented online search tool, which presents the products with the lowest environmental impacts in various categories to consumers. This site, however, is partially supported by funds from the European Commission's Intelligent Energy Europe programme and is not yet independently commercially viable.



significance of brand names in purchasing decisions tends to increase as consumers seek a 'known quantity' rather than take a risk with an unfamiliar brand.<sup>103</sup>

While online shopping environments allow greater access to detailed product information as well as professional and amateur opinions, it generally lacks the social and subtle contextual cues that can drive consumer choices, particularly with regard to the environmental attributes of the products and services sought. For example, in a study of Danish consumers, the context of the supermarket where consumers shopped — if it was 'value-oriented' or 'quality-oriented' — had a significant impact on the purchases of consumers, after all socio-geo-demographic variables were controlled for. The authors of the study conclude that it is the impact of the consumers around the shoppers that create a sort of 'culture' within the store which exerts an influence on the purchase decisions of the consumers (in this case, the study looked at the purchase of higher-animal welfare chicken eggs).<sup>104</sup>

It should be observed that there has been a recent effort to incorporate this 'social' aspect of in-store shopping into the online experience though concerns over user privacy have limited its wide adoption.<sup>105</sup>

### 3.2.5. DISPLAY OF INFORMATION

As public policies often focus on ensuring that consumers have sufficient information to make well-informed choices, the effective provision of that information becomes critical to the success of the policies. Consumers, however, often express inconsistent desires towards the provision of information; at times requesting a simple logotype to summarise a certain product attribute, while at other times expressing frustration at the lack of information available to them.<sup>106</sup>

This challenge of providing the depth of information sought by consumers in a format that can be easily and rapidly understood is particularly acute for goods and services with environmental impacts as their advantages or disadvantages may not be easily summarised by the metrics that consumers typically use when making purchasing decisions (e.g. price, quantity, brand, etc.). Thus, more complex information which consumers may not be used to assessing (for example, the potential lifetime energy savings of an efficient appliance or the carbon footprint of a chocolate bar) must be presented in a way that is simple yet meaningful. Additionally, different consumers may have different demands for the quantity

<sup>103</sup> Degeratu Alexandru M et al., "Consumer Choice Behavior in Online and Traditional Supermarkets: The Effects of Brand Name, Price, and Other Search Attributes," *International Journal of Research in Marketing*, Vol.17,No.1,p.55-78.

<sup>104</sup> Andersen, L. M. 2002. Project on demand for organic foods – Domestic and foreign market perspectives: Working paper 6: Consumer evaluation of environmental and animal welfare labeling: An econometric analysis on panel data using mixed multinomial logit. AKF, Copenhagen.

<sup>105</sup> [my.eurorscg.com/unprotected/news/clippings5/nyt2-11-30.pdf](http://my.eurorscg.com/unprotected/news/clippings5/nyt2-11-30.pdf)

<sup>106</sup> Leire, Charlotte et al., N.D. "On Nordic Consumers' perceptions, understanding and use of product related environmental information", Presented at the International Workshop for Sustainable Consumption, Leeds, [Available online: [homepages.see.leeds.ac.uk/~leekh/leeds04/4.2Leire\\_Thidell.pdf](http://homepages.see.leeds.ac.uk/~leekh/leeds04/4.2Leire_Thidell.pdf)]



and format of information provided, further adding to the challenge facing policy-makers.<sup>107</sup>

One potentially powerful observation is that simply knowing that detailed information on a product's attributes exists, regardless of whether they access it or not, may be sufficient for many consumers to feel comfortable with a simple logotype or other summary of a product's attributes. For example, a simple label indicating that the welfare of animals has been monitored throughout the production of a food product may leave consumers with doubts as to whether the verifying organisation is trustworthy, if the level of 'welfare' is sufficient, etc. However, simply including an Internet address on the label increases the consumer's trust in the label as well as their willingness to act based on the information provided on the label. As this approach also satisfies those who actually do seek more detailed information, this could be a potentially low-cost approach to addressing the inconsistent demands of consumers. As such, this approach merits further research into its applicability across products, Member States, and consumer segments.<sup>108</sup>

### 3.3. IMPLICATIONS FOR FURTHER RESEARCH

As a result of the research carried out in the previous sections, the list of uncertainties has been updated in Table 10. Some of these uncertainties have been deemed as a priority for future research based on the significance of impact on policy. Finally, the analysis carried out in the previous sections feeds into the chapter on research guidance, which aims at providing easy to follow guidance to be used by a large variety of organisations (e.g. academic and market research organisations, consumer associations, retailers, and policymakers), in order to undertake their own research trials on consumer behaviour.

<sup>107</sup> Leire, Charlotte et al., N.D. "On Nordic Consumers' perceptions, understanding and use of product related environmental information", Presented at the International Workshop for Sustainable Consumption, Leeds, [Available online: [homepages.see.leeds.ac.uk/~leckh/leeds04/4.2Leire\\_Thidell.pdf](http://homepages.see.leeds.ac.uk/~leckh/leeds04/4.2Leire_Thidell.pdf)]

<sup>108</sup> Brook Lyndhurst (forthcoming). Are labels the answer? Barriers to buying higher animal welfare products. A report for Defra.

**Table 8: Remaining uncertainties requiring further research**

| Hypothesis |  | Updated uncertainties   |
|------------|--|---|
| 1          | A product with a sale price lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.  | <ul style="list-style-type: none"> <li>• An environmentally-friendly product (Product A) and a similar product (Product B) without specific environmental benefits both have sale prices lower than a stated RRP, however the sales prices of Product B is lower than Product A. Would consumers still purchase the environmentally-friendly product (Product A) over Product B?</li> <li>• How much more is a consumer willing to pay, especially in the long run for environmentally-friendly products?</li> <li>• How would specific consumer segments in the EU react to this hypothesis?</li> <li>• Would this hypothesis apply to all types of environmentally-friendly products and services?</li> </ul> |
| 2          | Framing effects that present the lifetime cost of using non-energy saving products will prompt increased purchasing of energy-saving products compared to presenting information on the lifetime savings of energy saving products.                                    | <ul style="list-style-type: none"> <li>• How would the use of framing affect different consumers based on demographic factors such as cultural contexts, age, gender, etc. in EU?</li> <li>• Would this hypothesis apply to all types of environmentally-friendly products and services?</li> </ul>   |
| 3          | Implementing a 5 % tax for more environmentally harmful products and making consumers' aware of this charge will result in a greater decrease in sales of these products than if a 5 % cash back incentive was given for purchasing environmentally friendly products. | <ul style="list-style-type: none"> <li>• How does <i>the amount</i> of loss aversion vary across individuals?</li> <li>• How important is loss aversion and for which attributes and consumers?</li> <li>• How do the means of communication/display of the information to consumers about the 5% surcharge on environmentally harmful products affect their behaviour?</li> <li>• Does the amount of the tax included change consumer response?</li> <li>• How would specific consumer segments in the EU react to this hypothesis?</li> </ul>   |

| Hypothesis |  | Updated uncertainties  |
|------------|--|--|
|            |  | <ul style="list-style-type: none"> <li>• Would this hypothesis apply to all types of environmentally-friendly products and services?</li> </ul>  |
| 4          | Including both energy rating and annual operating costs in an energy label will result in greater sales of the more energy efficient than if only energy performance is presented in the label.            | <ul style="list-style-type: none"> <li>• How does the time-frame affect consumer behaviour when discounting? Would displaying running costs at an even shorter term such as weekly or monthly running costs (rather than annual costs) have different impacts on predicted consumer behaviour? What would be the effect on consumers if running costs were displayed over the expected lifetime of the product?</li> <li>• Does the impact of framing and/or discounting vary across different consumer segments and demographics?</li> </ul>  |
| 5          | A product with a label that explicitly states a tax included in the price will result in fewer sales than a product with the same total price but without a label that explicitly states the tax included. | <ul style="list-style-type: none"> <li>• How can the salience of tax be most effectively communicated so that consumers choose environmentally-friendly products over their more harmful counterparts?</li> <li>• What would be the most effective ways to make tax salient to consumers?</li> <li>• What would the impact of salience be for other consumer policy instruments such as financial incentives or labels?</li> <li>• How would specific consumer segments in the EU react to this hypothesis?</li> <li>• For which products, would this hypothesis be relevant for? How would the salience of tax vary across product groups?</li> </ul> |
| 6          | Zero rating an annual vehicle tax on the least polluting vehicles will result in more sales of these vehicles than if the same saving is offered as an annual cash-back                                    | <ul style="list-style-type: none"> <li>• How can the influence of 'free' be used to market other environmentally-friendly goods?</li> <li>• How can the influence of 'free' be used to market other environmentally-friendly goods?</li> <li>• Does the influence of 'free' vary across different product groups? If so, to what extent?</li> <li>• How does the communication of 'free' affect its influence?</li> </ul>  |

| Hypothesis |   | Updated uncertainties  |
|------------|---|--|
|            |   | <ul style="list-style-type: none"> <li>How could framing be used to affect the way consumers perceive different 'free' options?</li> <li>How would specific consumer segments in the EU react to this hypothesis?</li> <li>Would this hypothesis be relevant for another other product groups and tax regime?</li> </ul>   |
| 7          | A product that has a label displaying environmental endorsement from an independent third party will result in a greater increase in sales than a product with no endorsement, but with a label which provides the specific environmental information necessary to justify the claim. | <ul style="list-style-type: none"> <li>For which products would endorsements of independent bodies be more effective in influencing consumer choices?</li> <li>Which independent bodies endorse labels that could be considered widely-recognised? This will most likely differ according to country and product.</li> <li>Would this hypothesis be more relevant for a specific consumer segment?</li> </ul>  |
| 8          | A reduction in price (via an environmentally motivated government subsidy) will result in a greater increase in sales of a product, than if the same price reduction is presented for non-environmental reasons.  | <ul style="list-style-type: none"> <li>How does consumer trust in government differ across the EU and how this might impact consumer response to government backed environmental information and policy?</li> <li>How should information on government support and endorsement be effectively conveyed? Through awareness campaigns? Through in-store poster displays placed by the reduced price products?</li> <li>For which types of products would government endorsement be most effective?</li> <li>How would a label with a comparative system integrated with other types of endorsement such as consumer endorsement or endorsement from an independent body influence consumer behaviour?</li> </ul> |
| 9          | An energy label integrating government endorsement and comparison of energy performance will result in greater sales of a product compared to the same label without the endorsement.   | <ul style="list-style-type: none"> <li>How does consumer trust in government differ across the EU and how this might impact consumer response to government backed environmental information and policy?</li> <li>How should information on government support and endorsement be effectively conveyed?</li> </ul>   |

| Hypothesis |  | Updated uncertainties   |
|------------|--|---|
|            |  | <p>Through awareness campaigns? Through in-store poster displays placed by the reduced price products?</p> <ul style="list-style-type: none"> <li>• For which types of products would government endorsement be most effective?</li> <li>• How would a label with a comparative system integrated with other types of endorsement such as consumer endorsement or endorsement from an independent body influence consumer behaviour?</li> </ul>   |
| 10         | A product that has a label displaying endorsement of an independent body will result in a greater increase sales compared to a product with a label showing government endorsement.  | <ul style="list-style-type: none"> <li>• How would specific consumer segments in the EU react to this hypothesis?</li> <li>• Would this hypothesis apply to all types of environmentally-friendly products and services?</li> </ul>   |
| 11         | An energy label that states product energy efficiency compared with other products within the same product group will prompt higher sales of energy efficient products than a label that does not provide comparative information. | <ul style="list-style-type: none"> <li>• How would a label with comparative information influence consumer behaviour?</li> <li>• What type of consumer and other demographic factors would this hypothesis be most relevant for?</li> <li>• Other than government endorsement, do consumers consider other factors such as the product's energy consumption when purchasing the product?</li> </ul>   |
| 12         | A consumer endorsement in the form of a consumer award for EU ecolabelled products will increase sales of the highest performing products.   | <ul style="list-style-type: none"> <li>• How can consumer endorsement be most effectively displayed to influence the greatest number of consumers?</li> <li>• How can consumer endorsement be used in other examples to influence consumer choice?</li> <li>• How can consumer endorsement be most effectively displayed to influence the greatest number of consumers?</li> <li>• What role can government play in ensuring consumer endorsements are transparent, reliable</li> </ul> |

| Hypothesis |  | Updated uncertainties  |
|------------|--|--|
|            |  | and beneficial to consumers?   |
| 13         | Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.   | <ul style="list-style-type: none"> <li>• How can consumer endorsement be most effectively displayed to influence the greatest number of consumers?</li> <li>• What are the different impacts that that might arise from the use of product sales information online versus in-store?</li> <li>• What role can government play in ensuring that consumer endorsements are transparent, reliable and beneficial to consumers?</li> </ul>   |
| 14         | Environmentally-preferable products that are recommended by salespersons will sell more than the same environmentally-preferable products that are not recommended by in-store salespersons. | <ul style="list-style-type: none"> <li>• How can a sales person use a specific influence strategy to influence a consumer's purchasing decision?</li> <li>• Are particularly groups of consumers more susceptible to a certain influence strategy of salespersons than others?</li> <li>• At which point in the decision-making process does the advice of salesperson have the greatest impact on consumers?</li> <li>• How to measure the impact of the information provided by a salesperson by distinguished from the impacts of other factors that influence consumer decision-making?</li> </ul> |

### 3.3.1. PRIORITIES FOR FURTHER RESEARCH

All of the uncertainties listed in the Table 8 above suggest the existence of many research priorities in the field of consumer behaviour. A better understanding of how consumer endorsement effects choice, differences between online/in-store decision-making, the influence of sales people, receptiveness to marketing that plays on loss aversion etc. are all research topics that could be carried out in future studies.

Below some priorities for future and further research have been described in further detail based on the possible significance of their impact on the policy in question.

#### ■ An accurate and reliable consumer segmentation model across EU

The inherent diversity of the European Union presents challenges to researchers and policy-makers attempting to create useful consumer segmentation models. Understanding the different groups of consumers, future trends in the evolution of the EU population and demographics, and how they would react to specific policy instruments is a key step in designing effective consumer policy. Member States such as the UK have already developed such consumer segment models but it is uncertain whether such models can be applied at the EU level.

Further aspects related to how to categorise different consumer groups according to specific traits and characteristics also deserves further research. For example, there is evidence that cultural differences lead to different consumer responses across countries as cultures differ with regard to brand perceptions, perceptions of risk and brand loyalty, as well as effective advertising<sup>109</sup>. This has especially been seen in the increasing trend towards globalization, in which businesses who wish to cross national borders need to understand the cultural context of consumer behaviours and national cultural influences on consumers. However, this subject has been examined only to a limited extent and could be an interesting and innovating topic of future research.

#### ■ The effects of displaying price and consumer willingness to pay

This research priority applies particularly to consumer policy instruments that involve the use of financial instruments such as taxes and subsidies. The way in which a price change due to government intervention is displayed to consumers is important and can determine the effectiveness of the policy. In addition, further information on consumer willingness to pay is also important in terms of how to fix and display prices.

#### ■ Consumer behaviour in relation to specific products

This report has described how different endorsing bodies, in relation to the type of product that is being endorsed, can affect consumer choice. The analysis reveals interesting results that merit further research. Depending on the type of product in question (e.g. vehicles, energy using products, food, cosmetics, clothing, etc.), different types of policies may be more effective.

<sup>109</sup> Sayed Farrukh Ahmed et al., 2009, Consumers' Reaction to Product Variety: Does Culture Matter? Available online: [www.ccsenet.org/journal/index.php/ibr/article/view/2887/2675](http://www.ccsenet.org/journal/index.php/ibr/article/view/2887/2675)

#### ■ Effective means to display information to consumers

How to best communicate information to consumers remains an aspect that requires further research. Even if the right policy has been developed, it is important to consider how it might be most effectively conveyed to consumers. Different consumer segments react differently to information provision and this should be taken into account when developing policy. This report gives a first analysis of the different consumer reactions to communication of environmental information on products; however, more information is required to have greater confidence in the efficacy of policy and its successful communication.



## 4. EVALUATION OF POLICY INSTRUMENTS TO INFLUENCE CONSUMER BEHAVIOUR

The chapter provides information on the design of evaluation methodologies to collect information on consumer response to consumer behaviour policies. The chapter aims to raise awareness of how policy evaluation can contribute to the better understanding of consumer behaviour, for example, by not only assessing the outcome of certain policies but rather looking at the drivers for specific behaviour responses.

This chapter serves two aims: one is to explore a methodology that might allow policy makers to evaluate their own consumer policies; the other is to describe a database framework in which all evaluation data can be compiled. This database can then help to improve the design of future consumer policies. While the primary objective of the proposed database is certainly to gather evidence on consumer response, the database will also provide insight into the likely consumer responses to future policies.

Evaluation techniques developed within this section are beneficial both prior to the implementation of policies (ex-ante) where they can contribute to the design of the evaluation schemes and for ex-post analysis of existing policies.

In a first step (see section 4.1. ), an evaluation guide is established to assess the outcome of consumer policies. In most cases, though, consumer policies do not directly affect consumers; rather the measures that implement these policies have a direct effect on consumers. This section explains how to assess measures related to particular policies, and examines for each measure the factors that influence consumer responses to these.

Thus, the guidance produced within this section point to interesting results that demonstrate how the evaluation of various policies can provide for a better design of subsequent new consumer behaviour policies.

In a next step (4.1.4. ), data needs and strategies for data gathering will be discussed. The recommendations will be designed such that the additional data requirements will not be an excessive burden on the implementing authorities.

In a third section (4.2. ), the structure, use and maintenance of a future database is described, which will hold data derived from policy evaluations. The data gathered through the evaluation of various policies can then be interpreted in order to improve future policy design.

Thus, this chapter develops a comprehensive process through which consumer policies can be evaluated. Figure 12 illustrates the entire evaluation process.

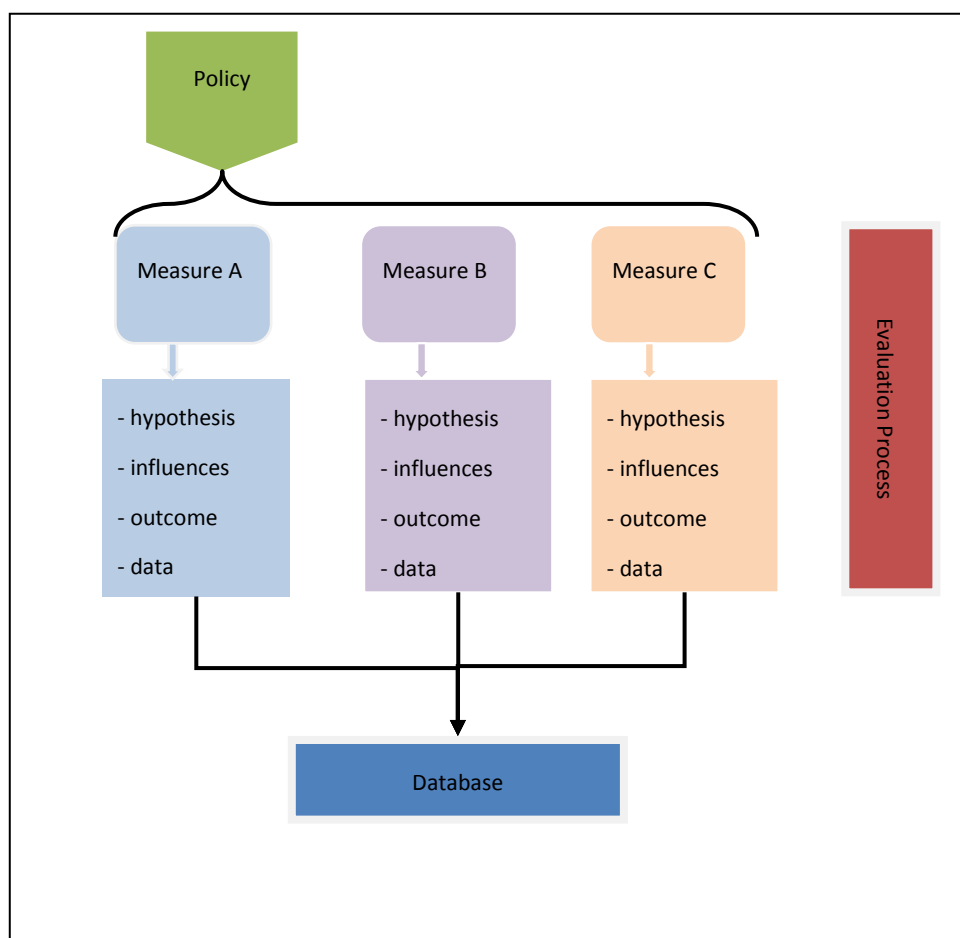


Figure 12: From Policy through Evaluation to Database

## 4.1. EVALUATION GUIDANCE

This evaluation guidance outlines a structure for the evaluation of consumer policies. In its present form, it is intended for the evaluation of existing policies, but could also be used to improve future policies through a better integration of evaluation data needs into policy design.

The guidance is aimed at policy makers who are trying to evaluate the impact of a specific consumer policy.

### 4.1.1. LINKING POLICIES TO MEASURES

In a first step, it is essential to recognise that consumer policies at the EU-level or at the national level — in the majority of cases — are not sufficiently specific to enable a direct evaluation of the impact of the policy on consumer behaviour. Rather, it will be necessary to identify the implementing measures deriving from the top-level policy decision. The more specific the measure, the more conclusive the collected evidence can be.

A non-exhaustive list of consumer-facing policy areas is presented in Table 11.

**Table 9: Consumer-facing policy areas**

| Policy  |
|---|
| <ul style="list-style-type: none"> <li>• food and nutrition</li> <li>• cosmetics</li> <li>• other chemicals (including paint)</li> <li>• buildings (including building materials, heating and air conditioning, energy)</li> <li>• motor vehicles</li> <li>• travel</li> <li>• finances and banking</li> <li>• clothing</li> <li>• retail</li> <li>• internet and communications</li> </ul> |

For each policy which aims to influence consumer behaviour, a number of measures can be identified. An example can be found in Table 12.

**Table 10: Example of linking policy and measures**

| Policy   | Directive 1999/94/EC – Information on the fuel consumption and CO <sub>2</sub> emissions of new cars   |
|----------|--|
| Measures | <ol style="list-style-type: none"> <li>1. Display of a label containing fuel consumption and CO<sub>2</sub> emissions information on cars at the point of sale.</li> <li>2. Production and distribution of a fuel consumption and CO<sub>2</sub> emissions guide.</li> <li>3. Display of posters containing fuel consumption and CO<sub>2</sub> emissions information in the showrooms of automotive dealers.</li> <li>4. The inclusion of fuel consumption and CO<sub>2</sub> emissions information in promotional material.</li> </ol> |

The evaluation will proceed on a measure-by-measure basis, i.e. the evaluator will assess each measure individually. While it may be possible to evaluate the success of a policy overall, it is more valuable to evaluate changes to consumer behaviour at the level of individual measures.

Possible general classes of measures are summarised in Table 13. They can aim for a change in consumer behaviour through information provision, through fiscal measures or through other measures.

**Table 11: Measures in consumer behaviour policies**

| Measure                             | Variations   |
|-------------------------------------|--|
| <b>Label</b> (information)          | <ul style="list-style-type: none"> <li>• endorsement</li> <li>• comparative</li> </ul>   |
| <b>Taxation</b> (fiscal)            | <ul style="list-style-type: none"> <li>• bonus-malus system</li> <li>• tax-break</li> <li>• taxation according to environmental criteria</li> <li>• fees / levies / use charges</li> <li>• subsidies / credit or loan provision</li> </ul> |
| <b>Competition</b> (information)    | <ul style="list-style-type: none"> <li>• jury award</li> <li>• public award</li> </ul>   |
| <b>Website</b> (information)        | <ul style="list-style-type: none"> <li>• purely informative</li> <li>• interactive</li> </ul>  |
| <b>Campaign</b> (information)       | <ul style="list-style-type: none"> <li>• poster</li> <li>• flyer</li> <li>• radio / TV / print media</li> </ul>  |
| <b>Voluntary agreements</b> (other) | <ul style="list-style-type: none"> <li>• with manufacturing</li> <li>• with retailers</li> </ul>   |

The above list is non-exhaustive and will change over time. For example, with the rise of new media, new concepts for consumer policy measures may surface that build on social networks. These measures may use social media platforms for promotion, information and awareness-raising.

### 4.1.2. LINKING MEASURES TO CONSUMER BEHAVIOUR

Once all the measures of a policy have been identified, it is possible to plan the evaluation on a per-measure basis.

Each measure will be assessed on its own and should give meaningful results independently.

A set of research questions or hypotheses which articulate the predicted consumer responses to each measure should be developed. Some examples of these types of hypotheses can be found in the previous chapter. As the number of possible hypotheses is infinitely large, the evaluation will have to go a step further and establish the main factors that might influence consumer behaviour. A number of key factors have been identified in early analysis in the report, and are presented in Table 14.

**Table 12: Factors affecting consumer responses to measures**

| Factors   |
|---|
| <ul style="list-style-type: none"> <li>• Influence of others</li> <li>• Loss aversion</li> <li>• Discounting</li> <li>• Framing effects</li> <li>• Influence of free (zero-price-effect)</li> <li>• Endorsement (from independent third parties or government)</li> <li>• Recognition of label / brand</li> </ul> |

Only a very specific set of factors will be applicable for each measure. The main challenge is thus to determine which factors are relevant to which measure. This will hence be the main focus of this step.

The matrix in Table 15 shows which factors might be implied by which measures, depending on the policy area. This matrix is only indicative and will depend heavily on the actual policy area.

**Table 13: Linking measures to factors affecting behaviour**

|         |                     | Factors affecting consumer behaviour |               |             |         |                   |             |             |
|---------|---------------------|--------------------------------------|---------------|-------------|---------|-------------------|-------------|-------------|
| Measure |                     | Influence of others                  | Loss aversion | Discounting | Framing | Influence of free | Endorsement | Recognition |
|         | Label               |                                      | X             | X           | X       |                   | X           | X           |
|         | Taxation            |                                      | X             | X           | X       | X                 |             |             |
|         | Competition         | X                                    |               |             |         |                   |             | X           |
|         | Website             | X                                    | X             | X           | X       |                   | X           | X           |
|         | Campaign            | X                                    | X             | X           | X       |                   | X           | X           |
|         | Voluntary agreement | X                                    |               |             | X       | X                 | X           |             |

#### 4.1.3. POSSIBLE OUTCOMES

Different measures in different policy areas will entail different outcomes. It is essential to understand the potential outcome of a measure in order to find the correct data to assess its impact.

All measures considered in this report aim at fostering the uptake of environmentally friendly goods and services and / or reducing demand for environmentally harmful goods and services. Potential outcomes are shown in Table 16.

Overall, nine different outcomes can be realised, as illustrated in Table 16. Colours code the degree of sustainability achieved. Blue colour coding signifies no change in overall sustainability (5). A number of cases exist — marked in light green — that increase the relative sustainability of consumption, without achieving at the same time a reduction in the consumption of environmentally-harmful goods and services and an increase in the consumption of environmentally-friendly goods and services (2, 6, and 9). This is only achieved in one case, highlighted in dark green (3). Two cases in yellow depict a situation that does not improve the sustainability of consumption (1 and 4). Finally, two cases in red mark a deterioration of the sustainability of consumption (7 and 8).

**Table 14: Potential outcomes of consumer policies**

|   |                       | Environmentally-harmful goods and services |                       |                       |
|---|-----------------------|--|-----------------------|-----------------------|
|   |                       | Consumption increases                      | Consumption unchanged | Consumption decreases |
| Environmentally-friendly goods and services | Consumption increases | 1  | 2                     | 3                     |
|   | Consumption unchanged | 4  | 5                     | 6                     |
|   | Consumption decreases | 7  | 8                     | 9                     |

When evaluating a policy and its implementing measures, the focus should not only be on the outcome of the measures, but also on the factors that are driving the consumer response. As the motivation for buying or not buying certain products or services cannot be directly deduced from observed sales numbers, it will be necessary to explore these driving factors during the evaluation process. Thus, the evaluation should always include a secondary assessment of the underlying influences for the observed change.

In addition, it is important to clearly define the basis for measurement: whether the measured change takes into account the baseline trend or not.

Though it is possible that a measure might affect goods and services that were not originally targeted, this is unlikely to happen and nearly impossible to measure.

#### 4.1.4. DATA GATHERING

In order to effectively measure the effect of consumer policies, it is crucial to acquire reliable and unbiased data on the actual outcome of such policies.

Data for the evaluation of consumer policies can come from a wide array of sources. Some of the data will be available from statistical offices, although this source is mostly limited to socio-economic information and only very few other areas such as information on new car registration. Nevertheless, statistical offices can deliver a very robust background on issues such as income developments, age structure, migratory movements and health issues.

## ■ Background data

Background data will be essential to filter out other influences that distort the effect of the measure. For example, an economic crisis which results in lower income levels will usually cause consumers to buy smaller cars which are on average cheaper and more fuel efficient than larger cars. If, at the same time, a policy to promote the uptake of fuel-efficient cars is introduced — say a car label — then it becomes more difficult to accurately attribute the relevant shares of the effect of the measure and the effect of the overall economic situation. A completely accurate picture would require a more sophisticated modelling approach.

However, modelling requires extensive data and computation capacities which are not easily accessible for policy evaluation and are therefore an expensive option. Thus, a more practicable approach is to factor out other influences by using graphical curve analysis which will be described further in the following sections.

## ■ Raw data

The main data needed for an analysis of the outcome of the respective consumer policy is the raw retail data of the product or service in question. This raw data is almost never accessible through official statistics. One notable exception is new car sales<sup>110</sup>. In other cases, it is possible to obtain the raw data directly from suppliers or supplier associations. In most cases, though, raw data will not be easily accessible and will have to be purchased from consumer retail monitoring institutions such as GfK SE<sup>111</sup>, who monitor most consumer retail markets and can perform customised monitoring on request to differentiate between environmentally harmful and environmentally-friendly products. These datasets are usually not free of charge.

The raw data should be quarterly or monthly data, facilitating the filtering out of other influences. In order to effectively filter out these non-policy- (or measure-) related drivers, it is important to distinguish between structural trends and shocks. Structural trends emerge due to demographic developments (i.e., a higher birth rate entails a higher demand for strollers etc.) or other long-term developments. Shocks result from singular events such as a stock-market crash or new regulation and taxation unrelated to the consumer policy. Coming back to the car example, a structural trend can be that sales figures for very inefficient cars such as SUVs are dropping over a longer time horizon. A shock could be the introduction of CO<sub>2</sub>-based car taxation, which would amplify the uptake of fuel-efficient cars and thus hide the true effect of a parallel introduction of a car label to promote greener cars.

## ■ Net outcome

The actual net outcome of any given consumer policy will then be the difference between the total change and the structural effects and shocks:

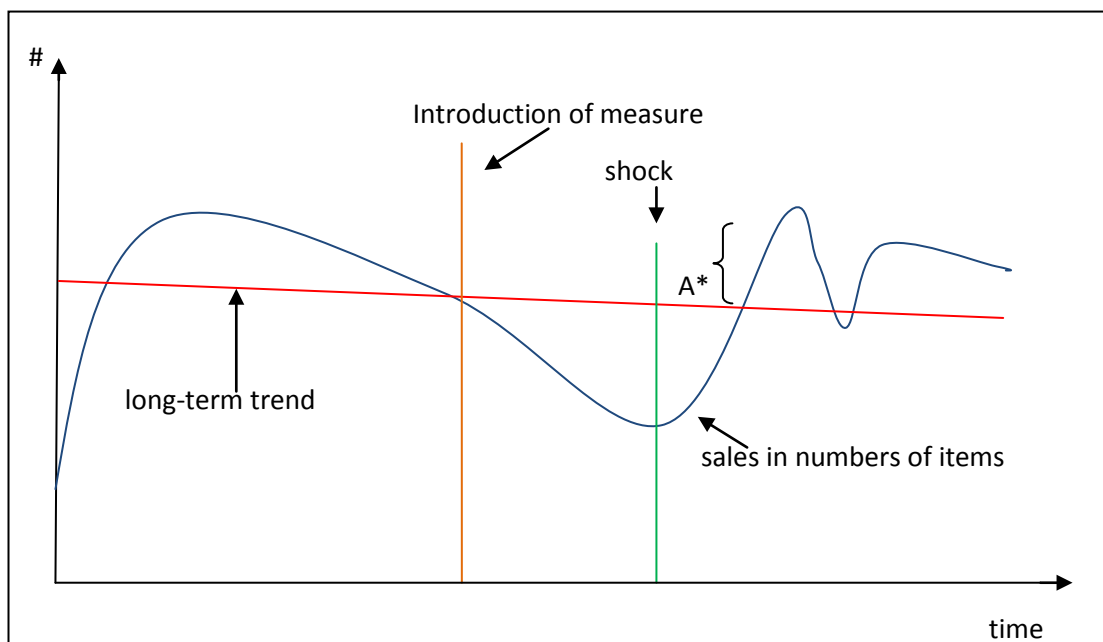
$$\text{Outcome}_{\text{net}} = \text{Number of Sales} - \text{long-term average} - \text{shocks}$$

<sup>110</sup> Where data is publicly available through new car registrations.

<sup>111</sup> Gesellschaft für Konsumforschung, GfK, a global market research group.



This procedure is illustrated in Figure 13 where the blue line represents sales in number of items sold over time. This product is considered environmentally harmful and the goal is to decrease sales.



**Figure 13: From raw data to net outcome**

The red line represents the long term average of sales (in numbers), taking into consideration socio-demographic factors. At a certain point in time, the government decides to introduce a measure aimed at reducing sales of the given product (yellow line). It is important to note that sales were already in decline before the policy was introduced. The numbers kept falling until a shock took place (green). The shock encouraged consumers to restart buying more of the environmentally harmful product, even though the measure was already in place. Sales even exceeded the long-term trend by  $A^*$ . After some time, however, sales levels stabilise again.

This could be an example of coal or hard-wood fired heating ovens. In that case, a sudden rise in gas and oil prices can lead to increased consumption of cheaper substitutes.

The government wants to know whether the measure can be considered effective. Looking merely at the sales numbers at the end of the timeframe compared to sales at the time of the measure's introduction, the answer would be that it did not manage to reduce consumption of the environmentally harmful good. Under a closer examination, however, taking into consideration the long-term trend and the existence of the shock, the analysis is more complex. Indeed, the decline of sales had been amplified by the measure and was stopped only by the severe shock that overruled the consumer policy. It can now be argued that in the absence of any measure the shock would have caused an even higher volume of sales, in other words, the consumer policy had cushioned the effect of the shock. This can only be argued, however, if the consumers

who bought the product due to the shock overlap with the consumers who were affected by the measure. A campaign promoting CHP-heating as a technological leap and luxury cannot claim that it is attempting to keep consumers from evading higher oil and gas prices by heating with coal or hard-wood. It is therefore essential to always bear in mind the measure under investigation.

It is also important to factor out seasonal influences such as extreme heat (for water and air-conditioning) or cold winters (heating). For some products, data will be needed from a much longer time span than for others. The observation timeframe depends on the longevity of the product or service.

The analysis of raw data becomes considerably more complex, once a number of similar measures are introduced simultaneously. In these cases, it will be difficult, if not impossible, to differentiate the cause-effect relationships to show the influence of each individual measure on the overall consumer response. This differentiation can then only be achieved through a more detailed analysis of the factors influencing consumer behaviour (4.1.5. ).

#### **4.1.5. FACTORS INFLUENCING CONSUMER BEHAVIOUR**

The underlying factors that influence consumer behaviour are not directly visible from the adjusted sales data. It is therefore essential to explore these influences further. Various options exist that include different forms of surveys (direct, telephone, mail, online), interview, and a range of consumer experiments.

While surveys and interviews are able to gather data at a much lower price than experiments, it has to be noted that surveys and interviews only provide data on reported behaviour, whereas experiments provide data based on observed behaviour. This is a crucial difference when it comes to analysing the results of the exploration: both methods show defects and data generally need to be adjusted in order to eliminate the respective methodological flaws. For one, respondents in surveys and interviews are biased by the fact that they know that their answer will be analysed. They will be tempted to respond in a way that they believe is socially accepted or desirable, i.e. they will very often not reveal selfish behaviour, laziness or profit maximising behaviour. On the other hand, participants in experiments are also affected by the fact that they act in an artificial environment. Modern survey and experiment designs try to take these shortcomings into consideration. However, since the “truth” is not accessible, these adjustments are always approximations.

Timing is also an important element for survey and interview design as consumers tend to forget relatively quickly. Moreover, consumer perception is influenced by seasonal influences. Surveys have shown that consumers are much more aware of drought and water shortage risks in high summer and autumn than in any other season.

In general, surveys, interviews and experiments are not meant to replace quantitative sales data, but instead they will complement it.

#### 4.1.6. ROLE OF POLICY DESIGN IN EVALUATION

Policy design can considerably affect the effectiveness of policy evaluation. As mentioned earlier, the introduction of a number of measures aiming at the same audience and the same goods and services significantly increases the complexity of the evaluation process and makes a quantitative assessment more challenging.

Furthermore, measures and their underlying policies should avoid ambiguity in formulating goals and targets. An effective evaluation procedure requires clearly formulated objectives to assess the success of the measure under investigation. If possible, these targets should include quantitative thresholds and deadlines and avoid measurements that are not available or that are especially difficult or expensive to obtain. A current example of non-straightforward targets is article 7(a) of the Fuel Quality Directive (2009/30/EC).<sup>112</sup>

Future policies aiming to influence consumer behaviour can considerably reduce the complexity of evaluation by taking into consideration these essential findings.

#### 4.2. EU-LEVEL DATABASE

The evaluation of individual measures leads to specific data on the net outcomes of particular measures under certain circumstances. Each single evaluation can only be valid under specific conditions, i.e. current socio-demographic trends, etc.

So far, the methodology allows policy makers to assess measures ex-post and to improve future policy design. A forecast about the impact of certain measures on sales numbers is not yet feasible by simply transposing the findings from an ex-post evaluation into the future. Transposing findings from one incident to other cases in the future or past is a method applied in a number of disciplines. In environmental economics, this method — called benefit transfer method — can be used to assess the value of an ecosystem without running costly valuation studies on site.<sup>113</sup> Research in this field has shown that the outcome is dependent on local influence factors such as demographics and cultural habits. The same will hold true for the transfer of consumer response values. A large number of influencing factors will differ between any two distinct cases. Even in the case where the value transfer is intended within the same site but inter-temporally, the effects of baseline trends in consumer behaviour will be considerable and will require an adjustment of the data.

In this section, we will examine how to make use of all evaluation results and derive ex-ante predictions about the likely outcome of certain measures. Thus, a complex EU-level database will be setup to collect the data and allow for information sharing and more informed consumer policy-making.

<sup>112</sup> Art 7(a) of Directive 2009/30/EC requires a reduction of lifecycle GHG emissions from fossil fuels. However, the methodology for calculating the contribution of electric vehicles in accordance with Directive 2009/28/EC is still to be decided.

<sup>113</sup> Navrud, Stale and Ready, Richard (2007): Environmental Value Transfer: Issues and Methods

In a first step, the database structure is described. Subsequently, we will explain how to use the database and, in a last step, how to maintain it.

#### 4.2.1. DATABASE DESIGN

The database will contain different types of data, i.e. both text and numbers. It is possible that the database will need adjustment over time. For now, the following format is suggested:

1. Defining the policy area:
  - a. food and nutrition
  - b. cosmetics
  - c. other chemicals (including paint)
  - d. buildings (including building materials, heating and air conditioning, energy)
  - e. motor vehicles
  - f. travel
  - g. finances and banking
  - h. clothing
  - i. retail
  - j. internet and communications
2. Defining the measure:
  - a. label
  - b. taxation
  - c. competition
  - d. website
  - e. campaign
  - f. voluntary agreements
3. Written description of the aim
4. Factors influencing consumer response
  - a. influence of others
  - b. loss aversion
  - c. discounting
  - d. framing effects
  - e. influence of free (zero-price-effect)

- f. endorsement (from independent 3rd parties or gvt.)
  - g. recognition of label / brand
- 5. Related hypothesis
- 6. Target audience (of the measure)<sup>114</sup>:
  - a. positive greens
  - b. waste watchers
  - c. concerned consumers
  - d. sideline supporters
  - e. cautious participants
  - f. stalled starters
  - g. honestly disengaged
- 7. Defining the socio-economic circumstances
  - a. median income in population
  - b. median income in target audience (if available)
  - c. income distribution in population
  - d. age distribution in population
  - e. shares urban / rural population
- 8. Timeframe
  - a. start (month and year)
  - b. end (month and year)
- 9. Raw retail data
- 10. Long-term trend in retail data (i.e. change in market share for the good or service)
- 11. Identified shocks (i.e. political and fiscal events that might affect consumer response)<sup>115</sup>
- 12. Net outcome
- 13. Comments (any particularities of the case)

These variables do not aim to provide a detailed description of each case. However, the above-mentioned data will be sufficient to highlight the main characteristics of each consumer policy measure and to allow for useful comparisons to be made.

<sup>114</sup> The following consumer segmentation follows the categories used by Defra. This might not be applicable in a European context and should be further refined to suit all EU Member States.

<sup>115</sup> This might be, for example, the non-availability of consumer credit due to a financial crisis that then prevents consumers from purchasing large household appliances or performing energy saving retrofits.

#### 4.2.2. USE OF THE CONSUMER BEHAVIOUR RESEARCH DATABASE

The database can be used for multiple purposes. The first use will be to promote evaluation of consumer policy measures and to foster the use of common standards and methodologies for these evaluations. Evaluating public policies contributes to good governance, helps to ensure accountability on public expenditures and allows for comparisons to be made between different regions and across different times.

A second and even more relevant purpose is to allow better-informed predictions of the likely outcomes of future consumer policy measures. This secondary application would involve an adjusted transfer of values in the database.<sup>116</sup> Multiple situations are possible: values can be transferred from examples that relate to the same policy measure; or the same geographic area; or from the same policy area; or from the same time period. In theory, the transfer of values<sup>117</sup> can happen in all of these cases. Past experience shows, however, that the transfer error will be smaller the more similar the examples are. In particular, transfers between different measures or policy areas might be prone to a high error; while transfers between time periods and geographic areas might have a lower error.<sup>118</sup> While the risk of forecast error is reduced by having a large database to draw on and comparing similar cases, small errors will always occur. Thus, the methodology can only be used to get rough estimates on whether a measure is posed to have any significant effect or not. This database will not be suited to compute ex-ante cost-benefit ratios of measures.

The database will grow over time. As more observations are entered into the files, forecast or transfer errors will most likely decline and it will be possible to explore which transfers incur the higher errors. For example, it would be useful to know which of the following transfers produces the lowest error:

- transfers within the same geographic area, policy area and similar time, but with a different measure;
- transfers within the same geographic area and the same measure, but with a different policy area and time;
- transfers from other geographical areas;
- etc.

A third use of the database is to improve the monitoring of EU consumer policies and their implementation and outcome throughout the various Member States. The database would provide a standardised, uniform platform that could measure and capture the impact of a wide range of consumer policy measures.

<sup>116</sup> In order to approximate the future impact of a new measure, policy makers can consult the existing values in the database and transfer these values. Inevitably, these transfers need to be adjusted to reduce the forecast error, also called the transfer error.

<sup>117</sup> The approach could follow a linear regression model and could lead to a regression formula producing outcome estimates under different settings.

<sup>118</sup> This will only hold for small differences in the time period and only for populations that share the same cultural and social background.

### 4.2.3. MAINTENANCE OF THE DATABASE

As the database will be developed over time, it will require continuous maintenance including both for the technical aspects as well as safeguarding the quality of the data and the validity of the data content.

The collected data will need to be verified in order to draw conclusions that can improve future consumer behaviour policies. This verification will need to take into account the specific circumstances of the various measures. Of course, surveys and experiments themselves should try to avoid data inconsistency by including knock-off questions in the process.

Data verification can be very resource consuming as no clear indication exists as to whether data input can be considered credible or not: technically, any measure can incur any consumer response. This is the fundamental difference between rational choice theory and real world consumer behaviour.

### 4.3. NEXT STEPS

The work carried out in this chapter will set the stage for a consumer test (research trial) of one of the hypothesis to be carried out, which is analysed in the last chapter. The consumer test could also be the test stage for the evaluation methodology developed in this report, and any conclusions will feed back into a revision of this evaluation guidance.

Beyond the scope of this project, next steps include the set-up of the described database. Once this data pool is structured, it will become essential to encourage evaluation activities on consumer policy measures, which will thus be the relevant next step.

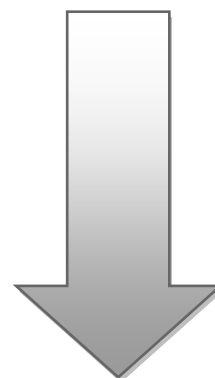
Finally, after a primary set of evaluation data has been collected, research into transfers and transfer errors to estimate, ex-ante, the net outcome of measures can begin. The 7<sup>th</sup> EU Framework Programme for research might be a possible venue for such large-scale research.

## 5. DESIGN OF EXPERIMENTS TO PROVIDE INFORMATION ON DRIVERS OF CONSUMER RESPONSE

The chapter aims to promote and facilitate greater research into the issues identified as needing further investigation in the previous chapters by providing research guidance and information on the experiments (or other pieces of research) that would need to be carried out to provide information on the uncertainties and hypotheses.

The guidance provided in this chapter can assist those engaged in developing research trial methodologies. This is particularly the case for research trials intended to inform the design of prospective policies that have a notable consumer behaviour element. This guidance document therefore seeks to raise awareness about how behavioural and social sciences can contribute to policies by providing better understanding of consumer behaviour, and inform policy makers on the steps necessary to better understand how consumers are likely to respond to specific policy interventions. The stages involved, from the research to the policy process, are introduced below.

1. Real world issue characterisation.
2. Understanding the issue from a real world perspective.
3. Hypothesis development.
4. Hypothesis testing including a pilot study.
5. Implementation / piloting.
6. Review and revision.



To illustrate stage 3 (hypothesis development), the project has developed 14 consumer behavioural hypotheses (see table 3). These explore the range of insights highlighted by the behavioural science evidence base. This guidance document continues this by using the hypotheses to illustrate the range of methodologies used within research trials. This guidance document also reports on the last chapter; which uses two of the 14 hypotheses developed, and follows the guidance in this document, to develop and undertake an actual research trial in order to illustrate the steps and range of challenges involved in undertaking research trials in this area.

### 5.1. STRUCTURE OF THE GUIDANCE

The remainder of the guidance is structured as follows:



- **An introduction to real world consumer research** including an analysis of the key actors and funders within three key EU MS. It also provides an overview of the key drivers of real world consumer behaviour as found in Chapter 2, and presents the 14 hypotheses of real world consumer behaviour developed from the drivers.
- **Information on a number of processes and issues to consider when developing research trials.** This includes an elaboration on the stages within the research process, including a description of when within the policy making process research trials are required; a number of contextual questions to consider, ensuring that the most appropriate research methodology is developed as well as an analysis of the benefits of collaboration within real world experiments.
- **Methods used within real world consumer research** including:
  - **Methods which seek to find out information from consumers**, which is often used to develop an understanding of the context and formulate a hypothesis. Qualitative methods within this category include interviews, focus groups and case studies. Working alongside these methods are those that include observational and ethnographic approaches (such as shadowing consumers on shopping trips and carrying out audits of subjects' kitchen cupboards). Finally, quantitative surveys tend to provide a more structured approach to data gathering, permitting statistical analysis of the results.
  - **Economic experiments** ranging from the most controlled laboratory-based experiments, to more realistic but harder to control natural field experiments. These are illustrated with case studies later in this section.
- **Important concepts to consider** when developing research methods. This includes the counterfactual (i.e. what would have occurred without intervention), validity of the findings, the sampling frame population from which the sample will be recruited, and the reliability of research findings.
- **Guidance on choosing a research method** via a series of questions and decisions trees.

In the last chapter, an **actual research trial** was undertaken within the project in order to illustrate how the guidance can be used. A description and analysis of this research trial is provided. Finally, in the Annex of this report, specific details regarding the logistics and testing of the research trial is provided.

## 5.2. AN INTRODUCTION TO REAL WORLD CONSUMER RESEARCH

### 5.2.1. INTRODUCTION

Consumer research seeks to understand how and why consumers behave the way that they do. This is important not only to producers and retailers, but also to governments and regulators when developing policies which seek to intervene or influence consumer behaviour. There is a range of approaches to consumer research. A common approach is to assume that all consumers will act to maximise the value or utility that they receive from a given purchasing decision with reference to economic theory and the rational actor framework. Whilst this is useful, there is increasing evidence that consumers do not always follow this framework in the real world, but use a range of heuristics or short-cuts to reduce complexity.

Behavioural economics takes as its starting point evidence gathered in empirical work (mainly economic experiments) that have documented the departures from perfect rationality. As such, behavioural economics (and behavioural sciences more generally) can help us understand what factors are likely to affect behaviour beyond those that are incorporated in the rational actor framework.

A number of important drivers of real world consumer behaviour can be identified<sup>119</sup>:

- The importance of how a product is **presented and framed**.
- The importance of **highlighted differences** between products.
- The importance of **endorsements** from different parties.
- The influence of **brand recognition**.
- The importance of **social influence** on consumer choices.

#### 5.2.1.1 Existing Real World consumer behaviour research

The project undertook mapping exercises in three relevant EU MS in terms of behaviour based research (France, Germany and the UK). The mapping exercises identified the key actors and sources of funding within the field of research and an analysis of the research context based on these. The survey found that the focus of the existing research in the three countries is as follows:

- **In France:** The focus tends to be on nutritional and health-related aspects.
- **In Germany:** There is limited focus on consumer behaviour and the environment. As with France, the focus tends to be on nutritional and health-related aspects of behavioural research.

<sup>119</sup> These are introduced here and explained in more detail below in Section 2.4 below.

- **In the UK**, research into consumer behaviour in the UK currently takes place within a broad range of institutions, across a range of disciplines within both the public and private sector and funded by a variety of actors.

### 5.2.2. ACTORS WITHIN REAL WORLD CONSUMER RESEARCH

The mapping exercise undertook a survey of the existing actors within real world consumer research, the results of which are summarised in Table 17, Table 18 and Table 19 for France, Germany and the UK.

**Table 15: Key Actors within Real World Consumer Research in France**

|               | Academic research  |   |  |
|---------------|--|---|--|
|               | University departments   | Cross-departmental working  | Institutes   |
| <b>Actors</b> | <ul style="list-style-type: none"> <li>• Université de Rennes</li> <li>• Paris School of Economics</li> <li>• Sorbonne (Université Paris Descartes)</li> </ul> | <ul style="list-style-type: none"> <li>• Mixed research units':</li> <li>• Sorbonne Economics Centre (UMR CNRS 8174).</li> <li>• Economics and Management Laboratory (UMR CNRS 5118)</li> <li>• Theoretical Economic Analysis Group (UMR GATE 5824).</li> </ul> | <ul style="list-style-type: none"> <li>• INRA (Institut national de la recherche agronomique)</li> <li>• l'Unité d'expertise scientifique collective</li> <li>• Social Science, Agriculture and Nutrition, Land-use and Environment Department (INRA UAR SAE2).</li> </ul> |

**Table 16: Key Actors within Real World Consumer Research in Germany**

|               | Academic research   |   | Government research  |
|---------------|---|---|--|
|               | University departments  | Institutes  | non-departmental bodies  |
| <b>Actors</b> | <ul style="list-style-type: none"> <li>• Carl von Ossietzky Universität Oldenburg</li> <li>• Rheinische Friedrichs Wilhelms Universität Bonn</li> <li>• Technische Universität München</li> </ul> | <ul style="list-style-type: none"> <li>• Institute for Social Ecological Research (ISOE)</li> <li>• Öko-Institut for Applied Ecology</li> </ul> | <ul style="list-style-type: none"> <li>• German Council for Sustainable Development (RNE)</li> <li>• Federation of German Consumer Organisations (VZBV)</li> </ul> |

**Table 17: Key Actors within Real World Consumer Research in the UK**

|               | Academic research  |   |   | Government research   |  | Private   |
|---------------|--|---|---|---|--|---|
|               | University departments   | Cross-departmental working  | Institutes  | Departments   | non-departmental bodies  |   |
| <b>Actors</b> | <ul style="list-style-type: none"> <li>• University of Cardiff</li> <li>• Nottingham Trent University</li> <li>• University of Surrey</li> <li>• University of Manchester</li> <li>• London School of Economics (LSE)</li> </ul> | <ul style="list-style-type: none"> <li>• Human Behaviour and the Environment new opportunities programme (2002 - 2004; ESRC).</li> <li>• Cultures of Consumption research programme, led by Birkbeck College (2002 – 2007; £5 million).</li> <li>• Sustainable Technologies Programme (STP), (2002 – 2007; £3 million)</li> <li>• Research Group on Lifestyles, Values and the Environment (RESOLVE), (2006 –2011; £2.8million; ESRC)</li> <li>• Collaborative research centre on Sustainable Behaviours, (2009 – 2013; ESRC Governments).</li> </ul> | <ul style="list-style-type: none"> <li>• Sustainable Consumption Institute (SCI) at the University of Manchester (Tesco funded)</li> <li>• Policy Studies Institute (PSI).</li> </ul> | <ul style="list-style-type: none"> <li>• Sustainable Behaviours Unit (Defra)</li> <li>• Customer Insight (DECC)</li> <li>• Social Research and Evaluation team (DfT)</li> <li>• The Behavioural Insight Team, the Cabinet Office</li> </ul> | <ul style="list-style-type: none"> <li>• The Institute of Government</li> <li>• The Office of Fair Trading (OFT)</li> <li>• The Food Standards Agency (FSA)</li> </ul> | Retailers & • Private research consultancies (such as Brook Lyndhurst and BMRB) |

### 5.2.3. EXISTING FUNDING AVAILABLE FOR REAL WORLD CONSUMER RESEARCH

The survey of existing funding for real consumer research within the three MS found that:

- **In France**, funding for non-observational consumer behaviour research comes from two main sources: the National Research Agency (Agence Nationale de la Recherche, ANR); and the Environment and Energy

Management Agency (Agence de l'environnement et de la maîtrise de l'énergie, ADEME). Increasingly, Government ministries are funding research in this field including MEEDDM (French Ministry of the Environment) and MAAP (French Ministry of Agriculture).

- **In Germany:** Funding for consumer behaviour and related fields predominantly comes from public sources. The main sources for research in these fields are the German Research Foundation (DFG) and the Federal Ministry of Education and Research (BMBF).
- **In the UK,** research funding relating to consumer behaviour comes largely from public and national sources, with some private financing of retailer-commissioned research. The main source of national funding for this research is the research Economic and Social Research Council (ESRC).

Overall the survey found that the funding available for research exploring consumer behaviour is limited and that there are a number of barriers to more effective research in all three countries. The barriers were observed as follows:

1. Incorporating consumer behaviour into decision-making is still not common practice for policy-makers, who do not always make the link between priority environmental (or other) issues and consumer behaviour.
2. Interdisciplinary research programmes are not common practice among universities and institutions, as research tends to focus on one specific area (such as transport or energy). Focused interdisciplinary research on, or specific funding for, consumer behaviour research is rare.
3. Retailer-academic collaboration is rare, and there may be barriers to overcome in terms of sharing of commercially sensitive findings.

Setting up the funding requirements to promote more interdisciplinary research to include, for example, actors in the commercial and marketing fields (as has been the case in the UK) is therefore an important way to increase the effectiveness of existing and future research funding.

#### 5.2.4. DRIVERS OF REAL WORLD BEHAVIOUR

Behavioural science (which incorporates all disciplines of behavioural research including behavioural economics and psychology) explains that consumers are strongly influenced by emotions, habits, and by the behaviour of the people around them. Therefore, consumer preferences evolve and change over time according to the situation and the way in which information is presented. Another important aspect about consumer behaviour to understand is that consumers differ and purchase products for different reasons. Data collected from the literature sources within the section on drivers of consumer behaviour (section 2.1.1. ) have identified some of the following drivers of consumer behaviour:

- The presentation and framing of information
- Product differentiation
- The influence of endorsement
- Brand recognition
- Social influence

### 5.2.5. HYPOTHESES OF HOW CONSUMERS BEHAVE IN THE REAL WORLD

Chapter 2 undertook a review of the literature in this area and developed 14 hypotheses for how consumers behave in the real world. The hypotheses are reproduced in Table 4. The main underlying drivers of consumer behaviours from which they are developed from are summarised above.

## 5.3. DEVELOPING RESEARCH EXPERIMENTS

### 5.3.1. STAGES WITHIN THE RESEARCH PROCESS

Research is commissioned for a number of reasons by different funders. The six stages set out below identify the stages involved in undertaking research which seeks to respond to a particular challenge in the real world, such as policy development. In the case where the research is not focused on a particular challenge (such as research undertaken to expand the evidence base), only stages 2-4 are necessary.

- 7. Real world issue characterisation.** This involves exploring the issue in question and characterising it from a real world perspective. To illustrate; the issue might be a perceived lower than anticipated number of consumers switching electricity supplier when given the opportunity to when their energy market is liberalised. To complete this stage, the system of switch-over would therefore need to be described from the consumer's perspective and the material that they are presented with.
- 8. Understanding the issue from a real world perspective.** This involves using the existing evidence base and possibly initial data gathered to understand the issue within a real world perspective. For instance, the electricity liberalisation example, may involve:
  - Asking consumers how they perceive and respond to electricity market liberalisation
  - Running through the material with them and observing their behaviour to verify this behaviour; and
  - Using the existing theories and drivers of behaviour to develop an explanation of this observed behaviour. If a satisfactory explanation of

observed behaviour does not readily emerge, it may be necessary to return to stage 1 and explore the issue from a different perspective.

9. **Hypothesis development.** When developing a hypothesis, it should be possible to use an objective method to test it. To illustrate, the information gathered in stage 2 may strongly suggest that consumers recognise the existing electricity supplier's brand and trust that they are more likely to provide a reliable source of power. However, the real world characterisation of the issue in stage 1 established that the supplier makes no difference to the physical supply of electricity. The hypothesis might therefore be: *'Removing the branding from what is offered to consumers leads to greater overall financial savings for consumers'*.
10. **Hypothesis testing** including a pilot study. The hypothesis needs to be tested within a research trial. Section 5.4. introduces these experimental approaches and describes the trade-off between the highly controlled but artificial setting offered by laboratory experiments, and the more realistic but less controllable field experiments. An important part of ensuring the usability of the experimental design is to pilot the experiment on a small sample of the population before proceeding with a larger sample.
11. **Implementation / piloting.** If the results of the experiment suggest that the policy would be enhanced by adopting behavioural elements, the policy might be developed based on this. Returning to the electricity market liberalisation example, rather than removing all branding from the entire market, the competition authorities may require that the formerly nationalised suppliers be broken up and re-branded in some way. The policy can be implemented either for the entire population, or a subset pilot<sup>120</sup> population. The use of a pilot implementation population might therefore be seen to have many similar elements as that of a large scale natural field experiment but the intention is to refine the policy rather than the research methodology.
12. **Review and revision.** In light of the information gained through the policy implementation or piloting, the design of the policy can be reviewed and refined.

### 5.3.2. REAL WORLD CONSUMER RESEARCH & POLICY

The stages described above can be mapped against the established policy making cycle<sup>121</sup> as introduced in Figure 14 below.

<sup>120</sup> This is common within policy making and permits refinement of the policy.

<sup>121</sup> <http://www.transport-era.net/about-ent/description-of-ent/procedures-for-cooperation.html>

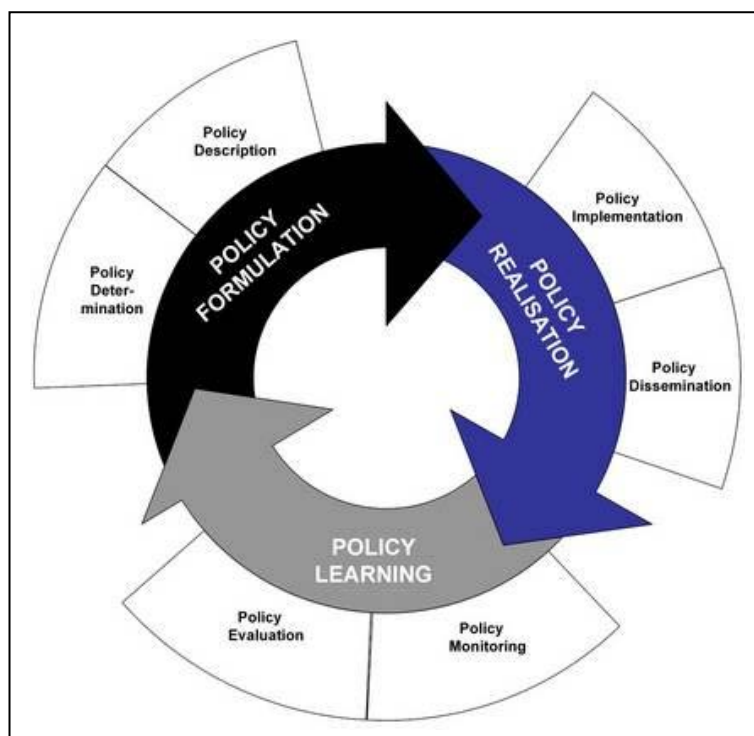


Figure 14: Diagrammatic representation of the policy cycle<sup>122</sup>

Table 18: Mapping of research stages against the phases within the policy cycle

|   | Research Stage   | Policy Phase       |
|---|--|--------------------|
| 1 | Real world issue characterisation.                     | Policy formation   |
| 2 | Understanding the issue from a real world perspective. |                    |
| 3 | Hypothesis development.                                |                    |
| 4 | Hypothesis testing including a pilot study.            |                    |
| 5 | Implementation / piloting.                             | Policy Realisation |
| 6 | Review and revision.                                   | Policy learning    |

Table 21 shows that the majority of the research process (i.e. research stages 1-4) relates to the policy formation phase of the policy cycle. Research stage 5, Implementation / piloting, relates to the policy realisation phase, and research stage 6, review and revision, and relates to the policy learning phase.

<sup>122</sup> Source: [www.transport-era.net](http://www.transport-era.net)



### 5.3.2.1 Contextual Questions

The research will always be undertaken within a certain context, both in terms of policy context and the constraints that the research needs to be undertaken. The following questions are intended to help the user establish these contextual factors from the outset. The responses to these questions should feed into the process of method development:

1. Will the outcome of the research feed directly into a particular policy or decision making process? If so:
  - a. Do you have a particular hypothesis which states how real world behaviour might influence the effectiveness of the policy?
  - b. Are there any particular confidentiality issues, or political sensitivities associated with the policy process which might affect the reliability of the research results?
  - c. Do you have an understanding of the potential impact of the policy and therefore how much could justifiably be invested in behavioural research? i.e.:
    - What are the potential benefits of the proposed measure? This may be available in the Impact Assessment for the policy.
    - What is the potential scope for the research to improve the efficacy of the proposed measure? The assessment for this may only need to be done as a broad proportion of the total impact.
2. When do you need the results of the research by? Will the timeframe for commissioning the work have a significant impact on the research to be carried out?
3. What particular resources do you have available to you? Consider time, budget, internal and external expertise, and existing research and evidence. What particular resource constraints do you have?
4. Is there the opportunity to pilot the policy on a subset of the population?

### 5.3.2.2 The Benefits of Collaboration

There is the potential for successful consumer research in this field to be undertaken in collaboration and partnership with different types of actors. The exact format and rationale for collaboration will vary, but a common format of collaboration (in policy development at least) is:

- Policy makers as commissioners of research;
- Consultants and academics with the expertise and availability to undertake research trials; and
- Retailers as hosts of research trials, providing a 'real world' environment in which consumer behaviour may be observed and researched.

Each partner will benefit from taking part in collaborative research trials in different ways. The main benefits are explored for the main players below:

- **For the policy maker** the effectiveness of policies can be enhanced by robust evidence on how consumers will actually respond to consumer choices in real world settings. This can either be based on hypotheses developed for prospective policies, or actual policies which have already been implemented in but are undergoing review and possible revision. Being involved with research trials will also likely provide a more useful platform for knowledge exchange (rather than desk-based theoretical discussions). In this way, the knowledge can be better embedded and behavioural factors can inform future policy developments at an early stage of the policy formation process.
- **The academics and consultants** involved in research trials have the opportunity to test their understandings – expanded and enhanced within a real world setting. Academics and consultants hold a considerable theoretical evidence base on how consumers are likely to behave. This can be enhanced with a knowledge exchange with retailers and marketing professionals.
- **NGOs and think tanks** will often assume some of the role that academics and consultants have within such collaborations. The benefits for such organisations are in terms of ensuring that the policies that they may have campaigned and lobbied for are implemented in the most effective way in behavioural terms. In terms of the reputational benefits, such NGOs will benefit from their donor's hearing about this constructive follow-through of campaigns towards implementation.
- **The retailers** involved in research trials will benefit in a range of areas. Where a policy is in formation, the retailer is assured that the policy has been tested within their own particular setting. Should the research trial highlight any competition or practical issue, collaboration at the research trial stage offers retailers with a direct route to those developing the policy. Furthermore, involvement in research, particularly research intended to improve sales of environmentally less-harmful products, will often offer retailers reputational benefits with consumers. This will particularly be the case where environmental campaigning NGO's are involved. Finally, collaboration offers a useful knowledge exchange between the extensive practical and empirical knowledge base held by retailers and their marketing consultants, and the theoretical knowledge base held among academics and research consultants.

■ **Case study 1: Sustainable Consumption Institute (SCI) at the University of Manchester**

A strong case study of collaboration is the *Sustainable Consumption Institute (SCI) at the University of Manchester*. The SCI was the UK's first retailer-supported research centre at its launched in 2008. Partly funded by the supermarket chain Tesco, it is a multidisciplinary centre researching major national and international issues associated with sustainability and encouraging consumers to adopt more sustainable lifestyles. The SCI focuses on four research themes; sustainable consumer behaviour and lifestyle, sustainable production and distribution, climate change and carbon, and making development more sustainable. In addition, interdisciplinary research on water resource sustainability is considered as a cross-theme. Collaboration with Tesco has provided researchers with the opportunity to carry out research within stores, while also providing access to valuable data sets (such as the data collected as part of Tesco's Clubcard scheme). Tesco have in turn benefited from in-depth research into different labelling schemes and other efforts to encourage the promotion of environmentally-preferable goods.

## 5.4. METHODS USED WITHIN CONSUMER RESEARCH

### 5.4.1. AN INTRODUCTION TO THE METHODS USED IN REAL WORLD RESEARCH

Research methods vary greatly depending on which stage of the research process they are to be used. Typically, methods which seek to gain information from consumers will be used to characterise possible challenges and develop hypotheses of behaviour (i.e. stages 1 & 3 as introduced above). Experimental methods will be used to test hypotheses and pilot measures already implemented (i.e. stages 4 & 5 above). Based on this distinction, this section is divided into the following two sections:

- **Methods which seek to find out information from consumers.** These include qualitative methods (such as interviews and focus groups), observational and ethnographic methods (such as supervised shopping trips), as well as surveying methods which use quantitative approaches to collect representation information on consumer behaviour.
- **Experimental methods,** which range from highly controlled laboratory based experiments, to field experiments undertaken in the real world (in some cases, without the subjects being aware of their participation).

### 5.4.2. METHODS WHICH SEEK TO FIND OUT INFORMATION FROM CONSUMERS

There are a large number of research methods which seek to obtain information directly from consumers. These are often used in the developmental stage of the research process in order to develop an understanding of the context and formulate a hypothesis. Some of the more frequently used methods are introduced here.

#### 5.4.2.1 Qualitative Methods

Qualitative methods focus on understanding respondents' knowledge, attitudes, beliefs and fears. They provide information on how consumers think they will behave in different circumstances and provide insights as to why consumers think they will behave in such ways. Qualitative data is rich and descriptive, but does not lend itself to statistical inference and contains limited predictive information about the final outcomes of the intervention. Qualitative methods can adequately elicit consumer opinions and beliefs, but they do not offer a measure of likely behaviour. Therefore, qualitative methods can:

- Provide detailed insight into consumers' decision making processes,
- Be effectively combined with other methods such as quantitative surveys and economic experiments to provide more detail and guidance about the design of the questionnaires and experiments, and inform the interpretation of the observations,
- Aid the formulation and design of possible remedies and can help to eliminate remedy options that have low probability of success, and
- Allow for the collection of significant amounts of relevant information in a relatively fast and cost effective way.

A major **strength** of qualitative methods is the depth to which exploratory analysis may be conducted. This potentially allows for:

- A more accurate reflection of complex reality and recognition of multiple layers of effects,
- A better understanding of processes and phenomena,
- Highlighting issues that the researcher may not have been aware of, and
- A better understanding of the quantitative results of the study.

The main **limitation** of qualitative research is that, inevitably, only small numbers of subjects can be studied because data collection methods are costly, time consuming and labour intensive. Qualitative methods may have further drawbacks, such as:

- Difficulty in analysing qualitative data rigorously,
- Lack of reproducibility and generalisability of the findings (that is, findings may not be applicable to other subjects or settings),
- Lack of focus or difficulty in distinguishing the crucial from the accessory issues, and
- Difficulty to reconcile differences between respondents' answers and an assessment of how representative the responses are of the wider target population.

The purpose of this guidance is to present not only the methods, but also the strategies available to protect against these potential biases and to enhance the rigour of the findings.

**Interviews** are a central methodological tool in qualitative research. Qualitative interviews are usually wide ranging and aim at probing issues in detail. They can take many forms ranging from semi-structured interviews to completely open-ended ad hoc conversations. The fundamental principle of qualitative interviewing is to provide a framework within which respondents can express their own understanding in their own terms.

The technique may be used to gather ideas or information. Interviews are suitable when:

1. Respondents differ a lot in characteristics that may affect ease of discussion (literacy skills, language, culture, gender, socioeconomic status, etc.),
2. Group interaction would inhibit respondents,
3. Respondents would not feel comfortable discussing the topics in a group,
4. There is a lot of printed material to be reviewed,
5. The topic requires in-depth responses from individuals or intensive follow-up questions,
6. It is important to know how a series of attitudes or behaviours link together,
7. Respondents cannot be assembled in one location due to where they live or for other reasons.

There is no one right method or format for interviewing that is appropriate for all situations and there are several different ways of wording questions. Such flexibility introduces the potential for bias, for example through the use of questions which lead or subtly point respondents towards a particular answer. For example, the question *‘Do you agree that this is a good product?’* might bias respondents to agree as this is the easier response to give. Underlying at least part of this bias is the relationship between the interviewer and interviewee. In some cases the interviewee may seek to give what they perceive to be the right answer, introducing an element of social desirability bias. It is therefore important that the relationship does not become overly familiar and the questions are constructed to be as neutral as possible. Whilst maintaining this distance, situational responsiveness and sensitivity on the part of the interviewer are crucial to get the best data possible.

In-depth interviews are generally conducted face-to-face (often in the respondent's home or place of work but possibly in a central location). Face-to-face interviews can be a particularly good option for long interviews and/or interviews where the building of trust is important. However, considerations of cost as well as burden on respondents may indicate the use of telephone interviews as a possible alternative.

Qualitative interviews can generate quantitative information, depending on the ways in which they are integrated with survey techniques and the sampling strategy used.

For example, types of responses can be classified together and numbers of respondents under each type accounted for.

**Focus groups** involve a group of individuals selected and assembled by the facilitator to discuss and comment on a topic from personal experiences. Focus groups rely on interaction within the group based on topics that are provided by the facilitator. Interaction is therefore the key characteristic which distinguishes focus groups from other forms of qualitative research. Focus groups can help to explore or generate hypotheses and develop questions or concepts for questionnaires and interview guides. Focus groups elicit information in a way which allows researchers to find out why an issue is salient, as well as what is salient about it. As a result, the gap between what people say and what they do can be better understood. This provides a rich understanding of the thought processes involved. However, to do this, it is often helpful for the facilitators to have a working hypothesis of real world behaviour for the participants to explore, such as the hypothesis introduced in Table 4.

Some of the limitations of focus group research are unavoidable and peculiar to this approach. The researcher, for example, has less control over the data produced than in either quantitative studies or one-to-one interviewing. The facilitator has to allow participants to talk to each other, ask questions and express doubts and opinions, while having very little control over the interaction other than generally keeping participants focused on the topic.

Focus groups are also limited in terms of their ability to generalise findings in relation to a whole population, mainly because of the small numbers of people participating and the likelihood that the participants will not be a representative sample. Furthermore, it cannot be assumed that all individuals within a group have expressed their own definitive individual view, as what they express may be impacted by the group setting.

**Case studies** may use a combination of other methods in order to compile a comprehensive and systematic picture of a particular case. Case studies may have different focuses including: individuals, households, consumer markets, or policies.

Case studies are useful:

- Where broad, complex questions have to be addressed in complex circumstances,
- Where individual, rather than standardised outcomes are sought,
- In providing a focus for debate and further probing of sensitive issues in informal interviews with other respondents,
- For illustrative purposes of typicality and/or limitations of findings and/or to highlight particular issues, and
- For demonstrating and communicating impact in presentation of findings, dissemination, publicity and training.

Given the amount of time needed to compile a comprehensive case study, careful selection of the particular case studies to be analysed is crucial. The ways in which case studies should be selected will depend on they will be used.

Case studies may contain information which can be quantified and/or followed up by quantitative surveys. This is often necessary in order to assess the significance of any particular case study or issue. Case studies may also often involve participatory methods if the case study involves a group, community or institution or with different members of households. They may also be analysed or documented using diagram techniques to clarify interrelationships between the different elements.

Qualitative research should not therefore be seen as competing with quantitative research. Instead, the two methodological approaches should be seen as complementary, providing different perspectives and answering different types of questions within any one broad area. Overall qualitative methods are an important tool within consumer research, but their weaknesses should be clearly stated, and the design of the focus groups or surveys should account for such biases.

#### ■ Case study examples

##### 1. *Market investigation into store cards by the UK's Competition Commission in 2005-2006*

The Competition Commission in the UK found an adverse effect on competition in relation to the supply of consumer credit through store cards and insurance purchased in association with the provision and use of store cards. One of the features of the situation was fact that consumers resorting to these store card services appeared relatively unaware of how they compared with available alternatives. The Competition Commission undertook both quantitative and qualitative surveys into public perception and experiences of store cards. The work explored consumers' current experiences and behaviour with respect to store cards and other forms of credit.

The qualitative research involved 40 in-depth interviews with store card holders, and allowed the researchers to explore in-depth how consumers use their store cards, and their knowledge about the different features. For example, the interviews found that the consumers who tend to not pay their balance every month are generally oblivious to the annual percentage rate of charge (APR) on the card, while those that do pay their balance monthly are more aware of APRs and how interest rates may affect them. This is an example of how qualitative research can assist policymakers to better understand the behaviour and knowledge of different groups for which the remedy is targeted.

Qualitative research might also have been used to present consumers with potential interventions and gather their views on how effective consumers think they (the interventions) may be. This might have informed the Competition Commission further about the decision making process of consumers and how they could better be empowered to make rational economic choices in relation to credit and insurance services.



## *2. Investigation into personal current accounts by the Office of Fair Trading*

This investigation focused on whether competition was operating to the benefit of consumers in the area of personal current accounts. The greatest challenge faced by consumers in this market was due to the difficulty in comparing the many different pricing structures offered by different banks.

To explore this, the UK's Office of Fair Trading used in-depth discussions with consumers to better understand how consumers compared different providers; what weights they put on the different aspects of pricing; and generally how they decide which service provider to use. This proved to be an important step in breaking down the decision making process and understanding what drives consumer's low lack of ability or willingness to make effective comparisons across providers. The insights from this were then used to determine the type of intervention that would effectively facilitate and improve consumers' decision-making in this market.

In addition to this, it was also envisaged that qualitative research could be used in the second stage, where potential interventions are discussed with consumers and their views on their potential effectiveness gathered. In this stage, qualitative research could be used to specifically address or uncover reasons why particular types of interventions may turn out to be unsuccessful. In other words, at this level, qualitative road testing could be helpful to eliminate options that have low likelihood of succeeding.

### **5.4.2.2 Observational and Verification Methods**

An important requirement for the methods used to explore consumer choice is that they seek to capture data on real world behaviour. Though there is value in exploring self-reported behaviour (i.e. how people say they behave in any given situation), there can often be significant differences between the things people say they do and the things they actually do. There are many reasons for this discrepancy. In part, it is often because what is being measured is the real world result of a series of heuristics and (or physiological short cuts) and emotive responses which very often reside within people's sub-consciousness. Where a data collection method allows participants to use their conscious and more rational thought processes, this data collection process risks subjects 'editing out' real world responses and replacing them with purchasing decisions based more on a cognitive understanding of what the rational behavioural response should be. The methods used therefore need to be both very specific and where possible ask questions about what actually happened in the past, and avoid general or hypothetical questions.

These methods are relatively new but there are a number of methods which have been developed which seek to directly observe behaviour – such as shadowing consumers on shopping trips – or verification methods - such as audits of subject's kitchen cupboards. These methods therefore seek to make a comparison between what subjects say that they buy and what they have actually previously brought. Both of these types of methods tend to be used alongside the more qualitative methods, not



least because of the levels of trust and relationship building required for the subjects to agree to take part.

If used correctly in combination, these methods can offer a strong cross-check on the findings from the qualitative research such as in-depth interviews. The greatest potential bias arises where the subject has the motive and the opportunity to modify their behaviour as they are aware that they are being observed. To overcome this, these methods work best if used before the issue being researched is revealed to the subject (so that they are less aware of how to modify their behaviour), or where possible, use a method which captures behaviour which has already occurred. This can be done via, for example, asking for recent receipts.

#### **5.4.2.3 Quantitative Surveys**

Quantitative surveys use structured questionnaires that provide quantitative information on what is currently happening in the field. They can also be used to elicit information on what may happen in the future if incentives presented to the consumer change or interventions are made. They usually draw a sample of respondents from the population of interest in order to make assumptions about the target population as a whole.

Quantitative surveys are designed to be objective and generalised. These techniques cover the ways research participants are selected in an unbiased manner, the standardised questionnaire they receive, and the statistical methods used to test predetermined hypotheses regarding the relationships between specific variables. The researcher is considered external to the actual research, and results are expected to be replicable no matter who conducts the research.

The goal of a quantitative survey is to generate inferences about the target population from which the sample is drawn. These inferences have precise statistical properties behind them, which is an important strength of this method. One of the most important design features is the respondent sample. The sample should be representative of those individuals in the population in relation to what the researcher wants to measure.

#### **■ The importance of piloting surveys**

Piloting is an essential element in survey research amongst consumers and businesses. In conducting survey research, piloting provides an opportunity to check:

- Any procedures for screening and identifying eligible respondents,
- The typical interview length and range and whether excessive length appears to affect quality of response,
- The questionnaire flow (including identifying any adverse effects from the order in which questions are asked and any parts of a long interview where the respondents appear to lose interest or become confused),

- Whether questions are easily understood and interpreted in the same way by different interviewees,
- Whether explanations provided in the preamble to certain questions are clear, sufficient and of appropriate length, and whether face-to-face prompt material is clear and achieves its objectives,
- Whether the questionnaire covers all key issues or if responses to open-ended questions (or informal comments made by interviewees) suggest important areas have been omitted or need to be covered in more detail,
- Whether there are questions or sequences of questions that significant numbers of respondents are unable to answer,
- Whether the wording of any questions presents interviewers or interviewees with problems.

### 5.4.3. BEHAVIOURAL EXPERIMENTS

Experimental economics is the application of experimental methods to test the validity of economic theories and test-bed new market mechanisms. Such experiments may be conducted in laboratory settings or in the field but will always seek to control the range of real-world influences to objectively understand why markets and other exchange systems work the way they do. Economic experiments allow policy-makers to pre-test policy interventions and remedies using human decision-makers before implementing the policy in the field. They do this with real people, presenting them with genuine incentives but do this within experimental context.

All experiments in economics have control, treatment and replication:

- **Control** means individual decisions made in the experiment are induced by the incentives created within the experiment and by no other factors.
- **Treatment** is the ability to change specific incentives or features of a policy and to identify how individual decisions change as a result, thus, establishing true causality, that is, why behaviour is changing.
- **Replication** is the ability for the experiment to be conducted multiple times by the same researcher, by different researchers and across different populations, in order to verify the results.

Therefore, laboratory based economic experiments have the advantage over natural field experiments in that they can control all the features of the real world that are not of importance to what is being tested, and can thereby reveal the causal relationships between specific policy features and behaviour. Furthermore, economic experiments permit the observation of actual behaviour of each individual, and then to aggregate the individual behaviour to observe the outcome of the whole system. This again is not feasible with field data.

In terms of use, economic experiments can either:

1. Compare the outcomes of different remedies in identical situations.
2. Compare the policy outcomes of the same remedy in different situations.

Experiments differ in the degree to which they are set in the real world. Experiments have been categorised broadly into the following four categories:

5. **Laboratory experiments** have the highest level of control. Subjects or participants in the experiment are often university students, and the type of goods and services they exchange in the experiment are often not revealed but simply labelled (e.g. product 1,2,.....,n). Laboratory experiments are the quickest and easiest to implement. However, they are sometimes subject to the criticism that the observations from conventional experiments cannot automatically be transferred to the real world because they lack external validity.
6. **Artefactual field experiments** are also conducted in the laboratory. However, they tend to use subjects that are experienced in undertaking the experimental tasks in a real world setting (for example, bond traders in a financial market experiment). Alternatively, the experiments may use different types of subjects (that is, men and woman, undergraduate and graduate students, or young and older individuals) to test if the fundamental incentives hold across different groups in our economy. And, if the participant sample is of a sufficient size, inferences with precise statistical properties about the target population can be drawn. Artefactual experiments are useful if the type of individual is considered important or some degree of past knowledge and experience within the subject is important to the finding.
7. **Framed field experiments** are conducted outside the traditional laboratory, but not necessarily in the 'real-world' field. Framed field experiments use subjects that are familiar with the setting in which the intervention may be implemented. Further, subjects in the experiments will often know the nature of the good or service that they are exchanging (for example, they know they are buying mortgages or they know they are buying pollution permits). Some control can be lost in framed field experiments as subjects may bring behavioural biases learnt in the 'real-world' to the experimental setting and then make their decisions according to their real world experiences as opposed to responding to the incentives in the experiment.
8. **Natural field experiments** stand out in that the subjects do not know they are participating in an experiment and the subjects naturally undertake the tasks which the experiment is attempting to observe. Natural field experiments have the lowest level of control and treatment.

The two extremes of these categories – i.e. laboratory experiments and natural field experiments – are explored in more detail below with reference to case study experiments.

### 5.4.3.1 Laboratory Experiments

Laboratory experiments provide a useful tool for testing theories of how consumers behave, and can suggest underlying mechanisms that might be at work. Laboratory based behavioural experiments might be compared to experiments using wind tunnels to test models of proposed aircraft, helicopters, cars, and trains. The wind tunnel provides the engineer with valuable data on scale models much like the laboratory provides economists with important insights on how people are likely to respond to economic decisions that they face. They provide economists with a controllable environment in which to confidently eliminate all variables other than those being tested. Like a wind tunnel, they also allow products and ideas to be tested without risking or interfering with consumers. Laboratory experiments generally place emphasis on the process by which decisions and allocations are reached, and a particular selection mechanism for participants.

Compared to many field experiments they are relatively cheap to conduct and can be conducted within relatively certain timescales. Subjects are typically given an incentive, and therefore typically perceive it as a 'contract' and are committed to take part and follow the rules posed to them.

#### ■ Method weaknesses

There are a number of potential weaknesses of laboratory experiments:

There is the potential for laboratory experiments to introduce bias. Subjects will be aware that their behaviour is being monitored, recorded, and subsequently scrutinized. Research has highlighted the influence of the artificial nature of the experimental situation itself, the subjects' perceived obligation to provide a certain response as well as the underlying power relationship between the experimenter and subject. The relationship between experimenter and subject has a particular relevance because it has been constructed within the laboratory. In many ways the laboratory reverses the consumer seller relationship so that the supposed consumer becomes the paid and obliged supplier for the purposes of the experiment. This risks the subject changing their physiological patterns of behaviour towards a relationship of for example, parent and child, physician and patient, or drill sergeant and trainee.

Care is also needed when interpreting or extrapolating the results of laboratory experiments. The types of experiments which are particularly limited in their ability to be extrapolated are those that seek to identify apparently altruistic behaviour, such as people's willingness to tip at restaurants. Part of the reason is that the choices that individuals make depend not just upon financial implications, but also on the nature and degree of others' scrutiny, the particular context in which a decision is embedded, and the manner in which participants are selected to participate.

#### ■ Analysis

Analysis of the results from laboratory experiments is made relatively straight forward by the controlled nature of the method. The key test is typically to compare the responses from the test group with those of the control group. An essential aspect is

statistical analysis to test the probability that the any observed difference has occurred by chance alone. Statistical tests, such as the t-test, are often used to examine the probability that the results from the control and treatment groups come from statistically different populations. There are non-continuous (i.e. yes or no etc) variants of the t-test which can test the more qualitative results. The use of such statistical analysis is relatively complex and risks being miss-applied and the results miss represented. Their use therefore requires either some degree of prior knowledge, or the support of an experienced statistician.

#### ■ **Consumer segments**

The exploration of market segments is a relatively controllable factor within laboratory based experiments as subjects can be quizzed in detail about how they fit into the demographics of whichever segmentation model is being applied. A key question when developing the methodology is whether to have targeted recruitment based on desired segment (i.e. the recruiter only accepts the subject once they are confident that they fulfil the required demographics), or whether to have open recruitment and segment after questioning. A major driver in this will be the population being recruited from. Where the population is not fully representative of the desired population, (because for example recruitment is occurring in a shopping centre during a working day), some level of targeting is desirable to ensure an even spread.

#### ■ **Robustness and representativeness**

The robustness and representativeness of the results are only as good as the method and recruitment procedure used.

Resource requirements:

- **Cost** – Moderate.
- **Time** – Moderate and predictable.
- **Skills** – Considerable for method development, moderate for recruitment and experimenting.
- **Other resources** –Often market scenarios are presented on computers. Therefore, a suite of networked computers is often required with a bespoke programme to present the scenario.<sup>123</sup>

<sup>123</sup> Further information: Levitt, S.D, List, J.A, What Do Laboratory Experiments Tell Us About the Real World?, University of Chicago and NBER, 27 June 2006 - <http://pricetheory.uchicago.edu/levitt/Papers/jep%20revision%20Levitt%20&%20List.pdf>

***Case study 2: Influence of consumer-to-consumer recommendations on purchasing decisions - web based simulation of word-of-mouth recommendations***

**Aim:** To test the effect of providing electronic word-of-mouth recommendations on consumer's consideration and purchasing choice of products which have a strong experience element (in this case laptops).

**Background:** Information from manufacturers often lacks the impartiality that the consumer seeks. Consumers therefore often seek recommendations from impartial sources when making a purchasing decision. Recommendations can also represent a useful short-cut when the range of issues in question is complex. Insights from someone who has experience of owning the product therefore represents a powerful way of getting an overview of the merits and limitations of a particular product. Sales assistance often has a key role to play in this regard but will have often no actual experience of a particular product and can therefore only provide an objective recommendation relative to the alternatives. They also have the incentive to promote a sale, irrespective of whether it is in the consumers perceived interests. A recommendation or review from previous consumers therefore offers an impartial overview of the product. It is also known that many consumers (female consumers in particular) seek the advice of those that they can relate to.

**Method:** The experiment presented a sample of 198 students from a University in the Southern USA with a realistic but generated online environment for evaluating a laptop for purchase within a dedicated computer laboratory. Within the simulator, ten laptop options were provided and compared against 25 attributes. The laptops were coded to avoid any bias from knowledge of brands. The simulator also had a pre-questionnaire to measure the subject's degree of motivation to process information. This was done as the experiment also sought to understand how word-of-mouth recommendations influenced those with different motivations to process information in a different way. The simulator only provided a word-of-mouth recommendation for one laptop and sought to test the objective influence of this recommendation only for those subjects who opted to view this recommendation. The programme behind the simulator measured the pages visited and the time spent.

**Findings:** The experiment measured not only outcome, but also the time spent considering the purchasing of a laptop. It also tested whether the word-of-mouth recommendation had a strong enough influence to lead some subjects to buy a less optimal product than observed within the control group. As might be expected, the findings suggest that those subjects with a high motivation to process information would spend more time considering their choice as a result of the additional information to process. Interestingly however, providing recommendations to those with a lower motivation to process information did not lead to spending more time considering their choice. It is believed that this explains why this group tended to opt for the recommended laptop, even when the recommended laptop was sub-optimal to their stated needs. This finding therefore highlights both the influence of word-of-mouth recommendations on consumers, as well as the potential weakness of a policy or system which either does not edit poor recommendations, or frames such recommendations as particularly important.

**Further information:** Case study from: Gupta, P. & Harris, J. How e-WOM recommendations influence product consideration and quality of choice: A motivation to process information perspective, Journal of Business Research 63 (2010) pp 1041-1049.

### 5.4.3.2 Natural Field Experiments

Natural field experiments (or field pilots) take place in a natural setting in which the research subjects do not know they are taking part in an experiment. In the case of consumer research, natural field experiments could take place in a store or online shopping environment, with shoppers unaware that their choices are being monitored, or could for example be undertaken on a large scale by utility providers. Research teams observe and collect information on behaviour and can introduce one or more different interventions, e.g. different types of labelling schemes, to certain groups. The behaviour of people within this 'treatment' group is then compared to the behaviour of those in non-treatment (or 'control') groups and allows researchers to make inferences about the impact of the different interventions.

Much of the **strengths** associated with natural field experiments is associated with the subjects of the research being unaware that they are taking part in an experiment. However, the method's strength also depends on the extent to which researchers are able to randomise the assignment of people into different treatment groups. If it is possible to work with a large sample in a randomised way, the method provides highly robust evidence with a high level of internal validity. A further strength of natural field experiments is that they often have greater policy impact because analysis is straightforward and the results are easy to explain to non-expert audiences. This is particularly the case when a randomisation process is used to assign subjects to either a control or a treatment group, making it very clear to compare different outcomes between the two groups. Therefore, where it is possible to implement a natural field experiment with a large sample in a randomised way - as was the case in the OPOWER case study introduced below- the method provides highly robust evidence with a high degree of internal validity.

A potential **limitation** of field experiments is that they need to be conducted with a retailer and therefore require a high degree of cooperation. Depending on what is being tested, retailers may be required to make changes to their marketing materials, in-store advertising or product labelling or may require staff to take part in new training or briefings as part of the research. While none of these necessarily have to be time-consuming, it is essential that retail partners properly understand what their role in the research involves and what will be expected of them.

Setting up a natural field experiment can also be time-consuming and requires careful planning. Numerous potential sources of error and bias need to be considered and controlled where possible. If working with retailers, it is also important to consider what the impact of assigning control and treatment groups might be. For example, if a research trial is going to test the efficacy of a new form of product labelling, and it is hypothesised that the new label will increase product sales, the retailer may find that store managers are unhappy if they are assigned to a control group (i.e. a store that is not testing the new label).

Finally, so called ‘spillover effects’ may also be a problem. These occur when the impact of the intervention on the treatment groups spills over into the control group. To return to the earlier example of a trial testing a new product label: a shopper might read the new label on a product in one store but then recall and utilise that information when shopping in another, non-treatment store. Controlling for spillover effects in natural experiments is difficult.

Natural field experiments are one of the most reliable ways of measuring actual changes in consumer behaviour and, depending on the design of the trial, the scale of change can often be measured. However, ascertaining precise cause and effect within natural field experiments is a challenge and is dependent on the way in which the trial is conducted and the intervention being tested. In the OPOWER case study introduced below, it was impossible for the research team to determine precisely whether it was energy consumption feedback, the provision of energy saving tips or the social comparison data (or all three) that caused the observed decreases in energy demand. However, had the Home Energy Reports contained just one of these three pieces of information, it would have been easier to explore why behaviour changed. Large sample sizes, randomised control and treatment groups and a robust sampling frame all increase the chances of reliably ascertaining why consumer behaviour may change.



### **Case study 3: OPOWER home energy feedback trial, Minnesota USA**

**Aim:** The OPOWER energy conservation programme aims to reduce domestic energy consumption by providing consumers with a Home Energy Report. Each report contains three types of information: feedback on current consumption (which rates households either ‘below average’, ‘good’ or ‘great’ depending on the level of energy consumed); tailored information on energy conservation measures; and, a report that compares individual households’ energy consumption with that of their neighbours.

**Background:** The company OPOWER is contracted to provide Home Energy Reports to half a million homes across the US. The experiment detailed here was a randomised natural field experiment run by a Minnesota-based utility company called Connexus Energy, with a total sample of 78,493 households. OPOWER’s pilot programmes were specifically informed by findings from behavioural science, such as evidence relating to social norms and the impact of feedback on behaviour.

**Methods:** Half of the sample households were randomly assigned into a Control group, which meant they didn’t receive any information, while the other half were assigned to the Treatment group. Households within the Treatment group then received Home Energy Reports, which were sent out either once a month (to sixty percent of the sample) or once a quarter (to the remaining forty percent).

**Findings:** The experiment found that the average treatment effect of the monthly Home Energy Report was a decrease in energy use of between 2.3 and 2.4 %. It was also found that high energy consumers conserved more energy after receiving their Reports than those who used less energy initially. However, the experiment did not test *why* the reports affected behaviour as it was impossible to distinguish between the effects of the feedback, the energy efficiency tips and the social comparison data. Survey evidence, carried out to support the findings of the trial, suggested that the reports influenced day-to-day behaviours like turning off lights and that these effects persisted over the full year of the programme.

**Further information:** Allcott, H. (2010) *Social norms and energy conservation*. Working paper. MIT Centre for Energy and Economic Policy. Available: <http://web.mit.edu/allcott/www/Allcott%202010%20-%20Social%20Norms%20and%20Energy%20Conservation.pdf>. See also: <http://www.opower.com/>

***Case study 4: Web-based trial on the influence of life-cycle cost disclosures on washing machine sales, Germany***

**Aim:** The experiment tested whether disclosing an estimate of life-cycle running costs in addition to purchase price would lead to more energy efficient (and water conserving) washing machines being sold. The experiment also sought to observe the impact of total sales and average price to test for negative impacts on the retailer's interests. The experiment was carried out in collaboration with the German online retailer Quelle.

**Background:** It is understood that the consumers often struggle to make accurate assessments of the life-cycle costs of buying and running appliances. The calculation can be rather complex, requiring a realistic understanding of the use rate and life of the appliance, conversions from energy and water units into monetary values and the application of a discount rate. Many consumers do not make such calculations, and instead use heuristics which are alternative ways of making decisions. Where the actual calculation can accurately be done on the consumer's behalf, there is the potential for consumers to buy appliances with lower life-cycle costs and will often lead to more energy efficient appliances being purchased. A further consumer choice factor kept in mind during the experimental design was how such life-cycle costs are framed, and whether they are presented as a loss or a gain.

**Method:** The experimental data was gathered from Quelle, a major German mail order business which operates an online shop at [www.quelle.de](http://www.quelle.de). The online consumers arriving at the website were randomly assigned into a test or a control group. After both groups had answered a number of questions to ascertain preferences and use patterns, the test group were provided with purchase, running and total life time cost information while the control group were given only product price information. The total number of consumers who followed through and added an appliance into a virtual shopping basket was 2,065 (1,040 from the test group, 1,025 of the control group).

**Findings:** The results of the trial suggests that including life-cycle costs when selling washing machines online decreases the energy consumption of the washing machines sold by 0.8%, and water by 0.7%. This means that the trial found that consumers bought more energy efficient washing machines when presented with life-cycle costs. The results also confirm that disclosing life-cycle costs did not impact on total retail sales volumes and therefore does not run counter to the interests of the retailer.

**Further information:** Reported in: Deutsch, M. (2010) *Life-cycle cost disclosure, consumer behaviour, and business implications, Evidence from an online field experiment*, Journal of Industrial Ecology 14:1, pp. 103-120

## 5.5. CONCEPTS TO CONSIDER

When designing any research trial or attempting to measure the impact of an intervention on consumer behaviour, there are a number of key concepts that it is important to consider.

### 5.5.1. THE COUNTER FACTUAL

Any research that attempts to establish a causal relationship between an intervention and its outcomes needs to be able to establish that the intervention – rather than other factors - is responsible for the observed outcomes. When considering this, an important idea to consider is the ‘counterfactual’ – that is, the outcome that would have occurred had the intervention not been implemented. For example, imagine a research trial in which the impact of salesperson recommendations on consumer car choice was under investigation. In this instance, the only way of being absolutely sure of the impact of the recommendation on the consumers’ final choice of vehicle would be if there was some way of knowing what the consumer would have done had they not received the recommendation (the counterfactual position).

In most instances, because this counterfactual position is unobservable, reliable estimates for the counterfactual must be identified. In the example above, this might mean comparing the choices of consumers who received advice from a salesperson with the choices of different consumers who did not (i.e. a control group). Approaches like this, which draw on experimental methods and apply them in real world setting, are often described as ‘quasi-experimental’.

### 5.5.2. VALIDITY

Most research trials will set out to answer a question of some kind. The extent to which the findings of a research trial can be deemed to reliably and accurately answer the question asked is termed its ‘validity’. In general, two types of validity are distinguished – internal and external. The design of a research trial often involves a trade off between the two.

**Internal validity** refers to the extent to which a study establishes that a factor or variable has actually caused the effect that is found. For example, in a study exploring consumer responses to a new environmental label, a research trial could be said to have internal validity if the study is able to demonstrate that changes in consumer behaviour are the result of the new label. The internal validity of a research trial can be affected by numerous ‘threats’, such as selection bias when recruiting participants. Pre-testing or piloting research before implementation is one way of reducing such threats. Experiments conducted within a highly controlled laboratory environment tend to have the highest degree of internal validity.

**External validity** is the degree to which the findings of a research trial or experiment can be generalised or scaled up from the research sample to a wider specified

population. The ability to extrapolate the results (in other words generalise from the results) depends heavily on the sampling frame used, and the extent to which the research subjects are representative of a larger population. In general, experiments which control for external factors (as in a laboratory experiment) have lower external validity.

### 5.5.3. SAMPLING FRAME

The extent to which research is reliable and able to be generalised is heavily determined by the people (or ‘subjects’) that are the focus of the research itself. For this reason, it is vital to construct a clear sampling frame before beginning any research trial. A sampling frame sets out not just what group of people will be the subject of the research, the sample and how they will be recruited, but also the wider **population** which the sample is going to represent. For example, if carrying out in-store research in collaboration with a retailer, the designer of the research trial might be interested in drawing conclusions about a particular type of person that shops in that particular store, about all of the people that shop in that particular store, or about all of the retailers’ customers across a range of store. As a rule of thumb, the larger the sample, the more general the results will be for the population.

### 5.5.4. THE RELIABILITY OF RESEARCH FINDINGS

In addition to taking steps to ensure research trials are designed in a way which ensures validity and generalisability, it is important to be aware of the ways in which both the people carrying out the research and those that are the subject of the research can affect the reliability of findings. In doing so, four broad types of error and bias should be considered.

**Subject error** refers to the way in which the subject of the research might behave in ways which introduce an element of error into the research. For example, consumers might shop differently depending on whether they are tired, stressed or particularly happy. If testing the effect of a new type of product label, it would be unreliable to base the test on one person’s reaction to the label because their behaviour may fluctuate according to these emotional factors.

**Subject bias** is the result of a more conscious effort on the part of the subject and refers to the way in which the person taking part in the research may modify their behaviour, often in response to the presence of the researcher themselves. For example, if a consumer knows that they are taking part in a research trial relating to the purchase of environmentally-friendly products, they may be more likely than normal to buy such products because they know that their behaviour is being monitored.

**Researcher error** (also known as observer error) occurs when the person carrying out the research allows mistakes to slip in during research design, data collection and analysis procedures. Researcher error can be reduced by ensuring that research teams

apply appropriate quality control procedures when carrying out projects and by ensuring adequate resources are devoted to the research.

**Researcher bias** (or observer bias) can also cause problems with the interpretation of research results. Researcher bias can occur both consciously and unconsciously, for example if a researcher allowed ideological views on the influencing of consumer behaviour to impact on the way in which a project was carried out or the results were interpreted. Researcher bias can be mitigated in a number of ways, for example by ensuring research teams are committed to impartial, neutral research and ensuring the work of individual researchers is subject to both internal and external consistency controls.

## 5.6. CHOOSING A RESEARCH METHOD

The precise research method that is used to explore consumer behaviour, as well as other details relating to the way in which the development of a policy proceeds, will be determined by existing evidence in the area, together with the resources available to the parties carrying out the research.

The decision trees in Figure 15 and Figure 16 below provide an indication of some of the key questions and considerations that should be borne in mind when embarking on a piece of consumer research. These key questions include:

- What is already known about consumer behaviour?
- Which research trial method can be used in the time available?

Figure 15 seeks to ensure that all existing evidence has been captured using a range of methods before the type of research trial methodology to use is considered in Figure 16; based on time available. Figure 17 provides an indication of the types of questions that to consider when planning a research trial.

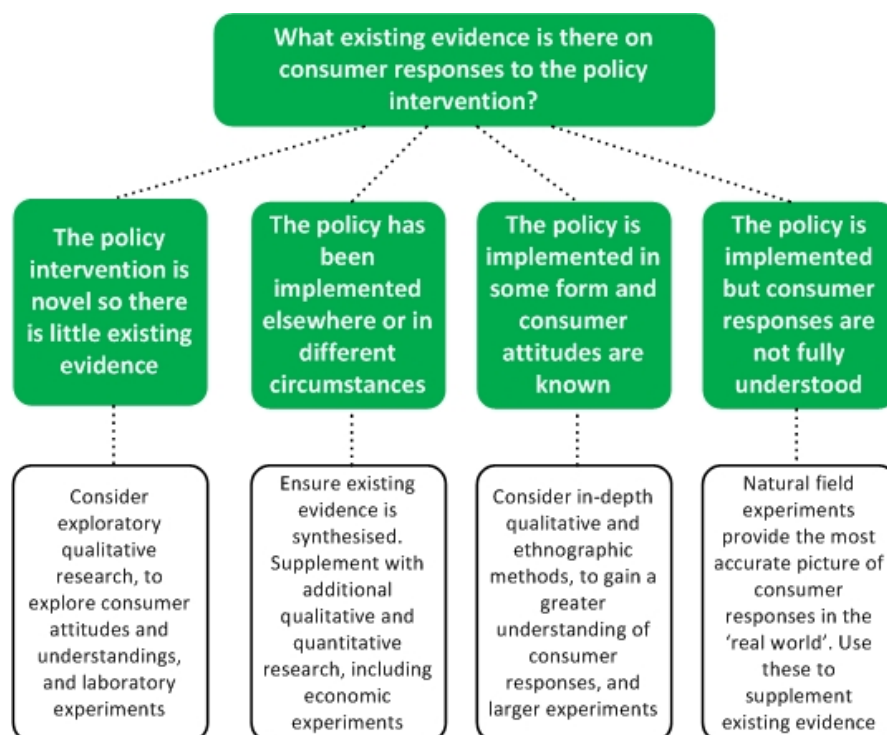


Figure 15: What is already known about how people respond to the intervention?

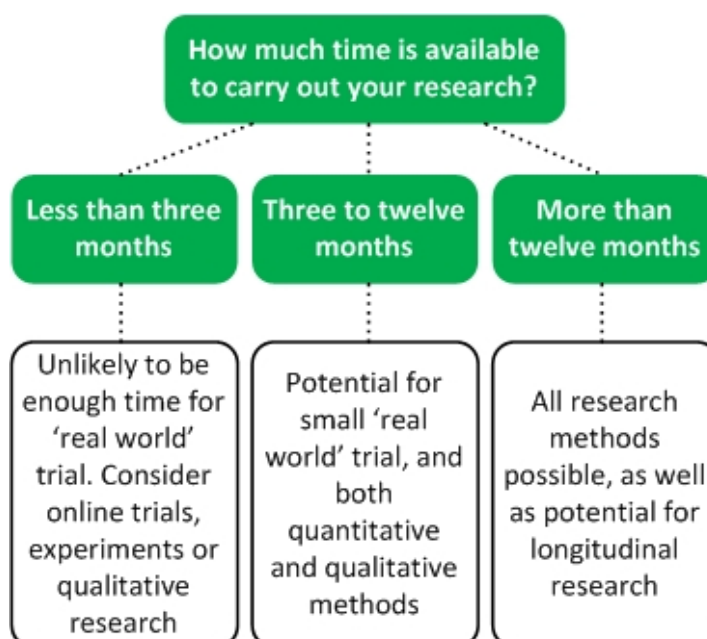


Figure 16: Which research trial method can be used in the time available?

## 5.7. THE TYPES OF QUESTIONS TO CONSIDER

Figure 17 below provides an illustrative example of the type of decision-making process that should inform any research trial, setting out key questions to consider. The final method chosen will depend on the time and financial resources available, the existing evidence base relating to consumer behaviour and policy intervention being tested and the skills and expertise available.



Figure 17: The types of questions to consider when planning your research trial



## 6. ILLUSTRATIVE RESEARCH TRIAL

This last chapter of the project describes how a hypothesis was selected and tested. This has been written up in so that the most relevant components of the process are concentrated in this Section and the details of the trial's methodology are provided in the Annex. The content of the write up has been presented in the following principal sections:

- The contextual constraints and opportunities
- Stages of research Trial development
- Selecting a hypothesis to Trial
- Development of the trial methodology
- Undertaking the Research Trial
- Results of the Research Trial
- Results of the Hypothesis testing Questions
- Statistical Analysis of the Results
- Discussion of findings

### 6.1. THE CONTEXTUAL CONSTRAINTS AND OPPORTUNITIES

Section 5.7. sets out a number of contextual questions intended to help users establish the contextual factors of the proposed research trial. The responses to these questions are useful in development of methodology.

This research trial does not relate directly to a particular policy development but does relate to the first questions posed in Section 5.7. which relates to the policy context. Therefore, the following relevant questions have been explored to illustrate the contextual realities of how the trial is implemented:

2. ***When do you need the results of the research by?*** *Will the timeframe for commissioning the work have a significant impact on the research to be carried out?* Yes – the outcome of the trial needs to feed into the wider project timeframe. Therefore, the trial needs to be completed within a few months.
3. ***What particular resources are available?*** *(Consider time, budget, internal and external expertise, and existing research and evidence. What particular resource constraints do you have?).* The Policy Studies Institute is owned by, and is based within the University of Westminster in London and therefore has access to a large student body. Furthermore, the project's lead partner Bio Intelligence Service has established systems and expertise for developing



websites. The trial is to be illustrative and therefore the staff resource available is limited. There is also no allocation within the project budget for any non-staff costs, such as an incentive for the participants or for the use of a computer laboratory. Therefore any such costs will need to come from reduced staff resource allocation.

**4. *Is there the opportunity to pilot the study / policy on a subset of the population?***

The small scale and limited resources available means that the piloting will need to be done in a focused way. The project team decided to focus piloting on the usability of the trial before it is implemented to ensure that it is understood as anticipated. Answering the above questions highlights the trial's tight timeframe and the moderate scale of resources available. However, the trial can take good advantage of the availability of the student body and the web-based expertise within the team. This suggested to the project team that the trial should:

- Offer a moderate prize<sup>124</sup> to be drawn between those who complete the trial.
- Be a web-based trial sent out to students at the University of Westminster within their routine news bulletin.
- Be piloted for usability with a small number of colleagues who have not been involved with the development of the trial methodology.

## 6.2. STAGES OF RESEARCH TRIAL DEVELOPMENT

Table 21 reproduces the six stages involved in the process of developing research. However, only stages 2-4 are relevant where the research is not focused on responding to a particular challenge. As shown within Table 21, Stages 2 & 3 have been undertaken as part of previous steps within the project.

**Table 19: Stages of developing Research Trials**

| Research stage                                   | Covered within                 |
|--|--------------------------------|
| 1. Challenge characterisation                    | N/A                            |
| 2. Understanding from the existing evidence base | Chapter 2                      |
| 3. Hypothesis development                        | Chapter 2 and 3                |
| 4. Hypothesis testing including a pilot study    | Chapter 6 (i.e. this document) |
| 5. Implementation / piloting.                    | N/A                            |

<sup>124</sup> From within the staff time budget. To illustrate, this could be in the order of scale of a personal MP3 player.

| Research stage         | Covered within |
|------------------------|----------------|
| 6. Review and revision | N/A            |

This research trial therefore represents Stage 4 – ‘hypothesis testing including a pilot study’.

### 6.3. SELECTING A HYPOTHESIS TO TRIAL

The project requires that at least one of hypotheses as shown in Table 5 to be selected and trialled. The process of assessment used to select a hypothesis is reported below:

#### ■ Hypotheses not suitable for trialling:

Holding a web-based laboratory based trial among students at the University of Westminster presents a number of particular contextual constraints on which hypothesis can be selected. These constraints are introduced and discussed below:

- Hypotheses relating to energy efficiency are not suitable for trialling: Many of the students will not be responsible for paying their energy bills; either because they live in halls of residence or they live with their parents or friends. Even among those students who do pay their own energy bills, the likelihood is that many will have only limited focus on energy efficiency; many will have recently left home and not be accustomed to the implications of their energy use. Furthermore, the bills will very often be split among others sharing with them and therefore the benefits from reducing their energy usage will also be split.
- Hypotheses which make reference to the in-store context are not suitable for trialling: This is to be a web-based trial and cannot test any hypotheses which cannot be fully tested within a web-based environment.
- Hypotheses which refer to the purchasing of vehicles are not suitable for trialling: Although some students will have driven and owned cars before attending University, car use among students in London will be very low and therefore not part of the student’s daily lives and discourse.
- Hypotheses which have a cultural context or reference are not best suitable for trialling: The University of Westminster has a significant number of students from outside the EU. References to labels used within the EU may well be new to some of the students.

- Hypotheses which seek to test endorsements are not best suitable for trialling. It is known that young people have different patterns of trust in terms of who they trust. In many cases, this will be in flux and forming, as the youngest among them leave home for the first time; the results would therefore not be extractable to wider society.

■ **Hypotheses more suitable for trialling:**

The remaining four hypotheses are listed below. The 1<sup>st</sup> and 4<sup>th</sup> were considered to be more suitable for testing as the 2<sup>nd</sup> and 3<sup>rd</sup> hypotheses would be more complex to test. This is because they refer to a government initiated, environmentally motivated tax so testing these would introduce an element of endorsement within it. This would make them more complex hypotheses to trial as the trial methodologies would need to separate and understand the influence of the tax on the subject's perception of the environment status of the product.

1. A product with a sale price much lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.
2. Implementing a 5% tax for more environmentally harmful products and making consumers aware of this charge will result in a greater decrease in sales of these products than if a 5 % cash back incentive was given for purchasing the environmentally friendly alternative products.
3. A product with a label that explicitly states a tax included in the price will result in fewer sales than a product with the same total price but without a label that explicitly states the tax included.
4. Providing consumers with information about high product sales for environmentally-preferable goods will positively affect consumer purchasing.

The remaining two hypotheses (1<sup>st</sup> and 4<sup>th</sup> from the list above) are independent of endorsement and have a fewer number of factors. As both of these hypotheses are simple to test within a trial survey, it was proposed that both of these hypotheses are tested within the research trial.

## 6.4. DEVELOPMENT OF THE TRIAL METHODOLOGY

The trial methodology is developed and presented in detail In the Annex. The methodology manages to respond to the following two major sources of potential biases:

- **How to provide real market incentives?** One of the significant weaknesses of laboratory based experiments is the artificial, non-market setting in which the product is presented to the hypothetical consumers. The offering of a real

incentive for participants therefore presents an opportunity to remove some of this artificialness.

- **How to control for measurement bias?** Another way that the potential for bias is reduced within the design of laboratory based experiments is to conceal at what point the measurement is being made with dummy or diversionary elements within the experiment. Therefore, the subject believes that what is being tested is the central element within the trial, but the point of actual measurement is sometime later<sup>125</sup>.

Therefore, the search trial as developed tests the impact of other consumer's behaviour within the main body of the experiment and that the impact of anchoring (i.e. reference to RRP) within the choice of prize draw to be entered into (after the experiment as part of the incentive).

The remainder of the details of how the research trial was developed is provided in the Annex.

## 6.5. UNDERTAKING THE RESEARCH TRIAL

The research trial was piloted 32 times by members of staff from both Bio Intelligence Services and PSI. A few technical changes were made as a result of this piloting process.

An invitation to take part in the research trial was sent to approximately 22,000 students via their weekly newsletter on the 30<sup>th</sup> of March 2011. The invitation used the following text:

### **Win a digital camera! Research volunteers needed to complete short online survey**

Student volunteers are needed to take part in a research study being conducted by the Policy Studies Institute (PSI). PSI is part of the University of Westminster's School of Social Sciences, Humanities and Languages (SSHL).

The aim of the research is explore how people make decisions when buying products. The study will involve completing a short online survey. This will ask you some questions about yourself and then ask you to imagine you are shopping for some products.

The survey will take about ten minutes to complete. Everyone who completes the survey will be entered into a prize draw for a state-of-the-art digital camera.

For more information and to take part in the research, please visit the [survey website](#)

If you have any questions about the survey or the research project, please [contact the research team](#)

<sup>125</sup> To illustrate, an experiment might want to test the impact of different music on their level of activity, as a proxy for example for the speed that people might drive. As well as asking how they feel after the music, an experimental design might measure the time taken for the participant to walk up and down the corridor leading up to the laboratory before and after exposure – comparing the changes in time taken associated with different types of music.

The trial was brought to an end on the 7<sup>th</sup> of April 2011 after 1 week and 419 completed responses from individuals.

## 6.6. RESULTS OF THE RESEARCH TRIAL

### 6.6.1. RESULTS OF THE BACKGROUND AND CONTEXTUAL QUESTIONS

- **Q1: Gender**

|              | All        |     | Treatment  |            | Control    |            |
|--------------|------------|-----|------------|------------|------------|------------|
| Male         | 135        | 32% | 66         | 16%        | 69         | 16%        |
| Female       | 284        | 68% | 138        | 33%        | 146        | 35%        |
| <b>Total</b> | <b>419</b> |     | <b>204</b> | <b>49%</b> | <b>215</b> | <b>51%</b> |

The results show that 68% of respondents reported to be female. There was not notable bias between how the respondents were assigned between treatment and controls groups based on gender.

- **Q2: Age**

|              | All        |     | Treatment  |     | Control    |     |
|--------------|------------|-----|------------|-----|------------|-----|
| 18-21        | 175        | 42% | 84         | 41% | 91         | 42% |
| 22-25        | 114        | 27% | 58         | 28% | 56         | 26% |
| 26-29        | 49         | 12% | 19         | 9%  | 30         | 14% |
| >30          | 81         | 19% | 43         | 21% | 38         | 18% |
| <b>Total</b> | <b>419</b> |     | <b>204</b> |     | <b>215</b> |     |

The results show that the largest reported age group was the under 21's at 42%. This age distribution is consistent with what would be expected from a student body. There was not notable difference between how the respondents were assigned between treatment and controls groups based on age.

- **Q3: Living situation whilst you are studying at the University of Westminster**

|                | All        |     | Treatment  |     | Control    |     |
|----------------|------------|-----|------------|-----|------------|-----|
| Halls          | 42         | 10% | 23         | 11% | 19         | 9%  |
| Parents        | 134        | 32% | 66         | 32% | 68         | 32% |
| Private alone  | 48         | 11% | 18         | 9%  | 30         | 14% |
| Private shared | 150        | 36% | 73         | 36% | 77         | 36% |
| Other          | 45         | 11% | 24         | 12% | 21         | 10% |
| <b>Total</b>   | <b>419</b> |     | <b>204</b> |     | <b>215</b> |     |

The results show that the most common reported living situation was 'Private Shared' (36%), closely followed by 'Parents' (32%). This distribution is consistent with what would be expected from a student body, living in a high cost city such as

London, although it has not been possible to compare it against any actual statistics for the University as a whole. There was only one notable difference between how the respondents were assigned between treatment and controls groups based on living situation, that of those living privately alone (Average = 11%, Treatment group = 9%, Control group = 14%). This (by its nature) represents a random assignment outcome and would not present a meaningful bias.

- **Q4: UK residency status**

|              | All        |     | Treatment  |            | Control    |            |
|--------------|------------|-----|------------|------------|------------|------------|
| UK resident  | 328        | 78% | 159        | 78%        | 169        | 79%        |
| Non-resident | 91         | 22% | 45         | 22%        | 46         | 21%        |
| <b>Total</b> | <b>419</b> |     | <b>204</b> | <b>49%</b> | <b>215</b> | <b>51%</b> |

The results show that 78% of respondents reported to be resident in the UK. Although no statistics could be found on what the proportion of the student body as a whole are non-UK residents, this figure appears to be higher than anticipated suggesting that either students resident in the UK were more likely to choose to take part, or some international students interpreted themselves as UK residents since they became students at a British University. There was no notable difference between how the respondents were assigned between treatment and controls groups based on their residency status.

- **Q5: Which laundry product would you buy?**

This question intended to test which students were willing to pay more for a less-environmentally impacting laundry product which could be used for the same number of washes.

|               | All      |             |
|---------------|----------|-------------|
| Percil        | 280      | 67%         |
| Ecover        | 139      | 33%         |
| <b>Totals</b> | <b>0</b> | <b>100%</b> |

The results show that a third (33%) of respondents did report being willing to pay more (£357 rather than £301) for a box of laundry power. Although hypothetical, this question does at least present a real world willingness to pay decision to the students.

- **Q9: How do you feel about your current lifestyle and the environment?  
Would you want to do more?**

|            | All |     | Treatment |     | Control |     |
|------------|-----|-----|-----------|-----|---------|-----|
| Content    | 114 | 27% | 60        | 29% | 54      | 25% |
| Bit more   | 220 | 53% | 104       | 51% | 116     | 54% |
| Lot more   | 82  | 20% | 39        | 19% | 43      | 20% |
| Don't know | 3   | 1%  | 1         | 0%  | 2       | 1%  |

|              |           |             |            |            |            |            |
|--------------|-----------|-------------|------------|------------|------------|------------|
| <b>Total</b> | <b>85</b> | <b>100%</b> | <b>204</b> | <b>49%</b> | <b>215</b> | <b>51%</b> |
|--------------|-----------|-------------|------------|------------|------------|------------|

The results of this question shows that most students who responded (73%) reported wanted to do more to help the environment. This result suggests that most of the students were aware of a gap between their attitudes and actual behaviour. There was no notable difference between how the respondents were assigned between treatment and controls groups based on this issue.

- **Q10: Do you do environmentally-friendly things in your current lifestyle?**

|              | <b>All</b> |             | <b>Treatment</b> |            | <b>Control</b> |            |
|--------------|------------|-------------|------------------|------------|----------------|------------|
| Not anything | 13         | 3%          | 9                | 4%         | 4              | 2%         |
| One or two   | 160        | 38%         | 80               | 39%        | 80             | 37%        |
| Quite a few  | 176        | 42%         | 84               | 41%        | 92             | 43%        |
| Most things  | 61         | 15%         | 27               | 13%        | 34             | 16%        |
| Everything   | 5          | 1%          | 2                | 1%         | 3              | 1%         |
| Don't know   | 4          | 1%          | 2                | 1%         | 2              | 1%         |
| <b>Total</b> | <b>419</b> | <b>100%</b> | <b>204</b>       | <b>49%</b> | <b>215</b>     | <b>51%</b> |

The most common response was 'I do quite a few things that are environmentally-friendly' (42%), followed by 'I do one or two things that are environmentally-friendly' (38%). 'I'm environmentally-friendly in most things I do' was also chosen by some students (15%) but only 3% identified themselves as 'I don't really do anything that is environmentally-friendly' and even less (1%) 'I'm environmentally-friendly in everything I do'. These results are consistent with a population which are willing to act but are selective and cautious in their participation in pro-environmental behaviours.

- **Q11: Which environmental actions do you do?**

|                        | <b>Recycle</b> | <b>Eat locally and in season</b> | <b>Buy sustainably caught fish</b> | <b>Compost bio-waste</b> | <b>Re-sue and repair</b> | <b>Use public transport</b> | <b>All</b>   |            |
|------------------------|----------------|----------------------------------|------------------------------------|--------------------------|--------------------------|-----------------------------|--------------|------------|
| Don't want             | 7              | 18                               | 26                                 | 41                       | 33                       | 11                          | <b>136</b>   | <b>5%</b>  |
| Haven't thought        | 7              | 73                               | 76                                 | 66                       | 28                       | 3                           | <b>253</b>   | <b>10%</b> |
| Probably Won't         | 17             | 40                               | 24                                 | 49                       | 33                       | 10                          | <b>173</b>   | <b>7%</b>  |
| Thinking of this       | 40             | 83                               | 59                                 | 56                       | 56                       | 11                          | <b>305</b>   | <b>12%</b> |
| Won't keep it up       | 47             | 47                               | 29                                 | 13                       | 48                       | 33                          | <b>217</b>   | <b>9%</b>  |
| Will keep              | 284            | 121                              | 109                                | 116                      | 192                      | 326                         | <b>1148</b>  | <b>46%</b> |
| Given up               | 13             | 18                               | 6                                  | 17                       | 16                       | 10                          | <b>80</b>    | <b>3%</b>  |
| Don't know             | 2              | 13                               | 16                                 | 13                       | 10                       | 1                           | <b>55</b>    | <b>2%</b>  |
| Not applicable         | 2              | 6                                | 74                                 | 48                       | 3                        | 14                          | <b>147</b>   | <b>6%</b>  |
| <b>Total</b>           | <b>419</b>     | <b>419</b>                       | <b>419</b>                         | <b>419</b>               | <b>419</b>               | <b>419</b>                  | <b>2,514</b> | <b>-</b>   |
| <b># Taking action</b> | <b>331</b>     | <b>168</b>                       | <b>138</b>                         | <b>129</b>               | <b>240</b>               | <b>359</b>                  | <b>1,365</b> | <b>54%</b> |

|                     |     |     |     |     |     |     |            |   |
|---------------------|-----|-----|-----|-----|-----|-----|------------|---|
| % Taking the action | 79% | 40% | 33% | 31% | 57% | 86% | <b>54%</b> | - |
|---------------------|-----|-----|-----|-----|-----|-----|------------|---|

The results to this question reveal that most (i.e. 54%) of the actions are being undertaken by the respondents, whether they intend to keep them up or not. There is some variation by action. The actions with the greatest self-reporting (use public transport at 86%) will not always be motivated a pro-environmental attitudes and would be seen as a practical necessity for most students studying in central London. The lowest reported action (compost bio-waste at 31%) reveals the lack of opportunity that the some of these students will face as not all London Boroughs<sup>126</sup> offer food waste collections and the limited space city residents have for home composting. This is contrasted with the proportion that recycles (79%) as all residents of London are offered some door-step recycling collections. The next lowest action ('Buy sustainably caught fish' at 33%) confirms the finding in Q 5 that a third of respondents are willing to pay more for environmentally less harmful products.

This question is useful as it seeks that respondents consider their behaviour in specific detail, and therefore might reveal more detail and contradictions in relation to Q10. For example, analysis of Q10 & Q11 results show that of the 5 respondents who reported that 'I'm environmentally-friendly in everything I do', 4 were confirmed to actually be doing all of the actions in Q11. Interestingly, the one who reported doing everything in Q10 but not all actions in Q11 did not report doing - or ever have done - any of the actions in Q11. This would strongly suggest quite strongly a miss-identification in Q10 for this one respondent.

A further test is to compare the self assessment of behaviour in Q10 with the wiliness to pay question being tested in Q5. This analysis shows that of the 242 respondents who reported doing: quite a few things, or, most things or everything environmentally friendly things; only 111 were willing to pay more for environmentally friendly washing powder. This is not necessarily contradictory as some of their actions will not require additional expenditure but it does highlight one of the barriers to further pro-environmental behaviours among many of these respondents.

<sup>126</sup> Crucially Westminster Council does not  
<http://www.westminster.gov.uk/services/environment/rubbishwasteandrecycling/recyclingfacilities/what-can-i-recycle/>



## 6.7. RESULTS OF THE HYPOTHESIS TESTING QUESTIONS

- **Q6: Question which test the influence of positive consumer ratings**

|               | All        |             | Treatment  |             | Control    |             |
|---------------|------------|-------------|------------|-------------|------------|-------------|
| Harpic        | 169        | 40%         | 74         | 36%         | 95         | 44%         |
| Ecover        | 250        | 60%         | 130        | 64%         | 120        | 56%         |
| <b>Totals</b> | <b>419</b> | <b>100%</b> | <b>204</b> | <b>100%</b> | <b>215</b> | <b>100%</b> |

The results of this test are consistent with the hypothesis being tested although might be due to chance alone.

- **Q8: Question which test the influence of price anchoring**

|                         | All        |             | Treatment  |             | Control    |             |
|-------------------------|------------|-------------|------------|-------------|------------|-------------|
| Standard Kettle         | 144        | 34%         | 76         | 37%         | 68         | 32%         |
| Energy efficient Kettle | 275        | 66%         | 128        | 63%         | 147        | 68%         |
| <b>Totals</b>           | <b>419</b> | <b>100%</b> | <b>204</b> | <b>100%</b> | <b>215</b> | <b>100%</b> |

The results of this test are NOT consistent with the hypothesis being tested. In fact they suggest that the opposite to what a positive results would be. This finding would therefore call for a summary conclusion that the hypothesis has not been proven.

- **Q12: The prize selecting question which test the influence of price anchoring**

|               | All        |             | Treatment  |             | Control    |             |
|---------------|------------|-------------|------------|-------------|------------|-------------|
| Camera one    | 331        | 79%         | 171        | 80%         | 160        | 78%         |
| Camera two    | 88         | 21%         | 44         | 20%         | 44         | 22%         |
| <b>Totals</b> | <b>419</b> | <b>100%</b> | <b>215</b> | <b>100%</b> | <b>204</b> | <b>100%</b> |

The results of this test are consistent with the hypothesis being tested although – although not strongly – and may well be due to chance alone.

## 6.8. STATISTICAL ANALYSIS OF THE RESULTS

The difference in results by the treatment group that the respondents were assigned may be due to pure random selection and therefore chance alone. Statistical test have therefore been used to test the probability that this is the case.

Statistical analysis in this context requires the development of a null hypothesis (i.e. the opposite to the hypothesis being tested) and test the probability that this null

hypothesis is the case. In this case, there are two statistical tests which are suitable to being used:

- **The chi-squared test** provides the probability that a null needs to be retained by comparing the observed or real results which what would have been expected if the null hypothesis was true and any difference was due to chance. This test is an approximation test using theoretically generated matrices of probabilities.
- **The Fisher Exact Probability Test** performs the same function as the chi-squared test but does so by calculating the actual probability of the result occurring (or more extreme results which would disprove the null hypothesis), relative the other possible results. This has historically been used when sample sizes are low (less than 5 measurements in any one result cell) as the approximate nature of the chi-squared test is most the case with such low numbers. However, with modern computing power it is possible to perform this test on larger samples such as this. This has been done using two spate online facilities<sup>127</sup>.

The results of these tests are provided in Table 22 . The expected results are required for the chi-squared test were calculated from the totals ignoring the actual results and assuming that they were randomly generated.

<sup>127</sup> <http://research.microsoft.com/en-us/um/redmond/projects/mscompbio/FisherExactTest> & <http://www.graphpad.com/quickcalcs/contingency2.cfm>

**Table 20: Results of the Statistical Analysis**

| Observed  |       |           |         | Expected                |     |           |         |
|---|-------|-----------|---------|-------------------------|-----|-----------|---------|
| Q6: Price anchoring with energy efficient kettles |       |           |         |                         |     |           |         |
|   | All   | Treatment | Control |                         | All | Treatment | Control |
| Harpic  | 169   | 74        | 95      | Harpic                  | 169 | 82        | 87      |
| Ecover  | 250   | 130       | 120     | Ecover                  | 250 | 122       | 128     |
| Totals  | 419   | 204       | 215     | Totals                  | 419 | 204       | 215     |
| Chi-squared                                       | 10%   |           |         |                         |     |           |         |
| Fishers probability                               | 11%   |           |         |                         |     |           |         |
| Q8: Price anchoring with energy efficient kettles |       |           |         |                         |     |           |         |
|   | All   | Treatment | Control |                         | All | Treatment | Control |
| Standard Kettle                                   | 144   | 76        | 68      | Standar d Kettle        | 144 | 70        | 74      |
| Energy efficient Kettle                           | 275   | 128       | 147     | Energy efficient Kettle | 281 | 134       | 147     |
| Totals  | 419   | 204       | 215     | Totals                  | 423 | 204       | 221     |
| Chi-squared                                       | (27%) |           |         |                         |     |           |         |
| Fishers probability                               | (26%) |           |         |                         |     |           |         |
| Q12: Price anchoring with camera prize            |       |           |         |                         |     |           |         |
|   | All   | Treatment | Control |                         | All | Treatment | Control |
| Camera one  | 331   | 171       | 160     | Camera one              | 331 | 170       | 161     |
| Camera two  | 88    | 44        | 44      | Camera two              | 88  | 45        | 43      |
| Totals  | 419   | 215       | 204     | Totals                  | 419 | 215       | 204     |
| Chi-squared                                       | 78%   |           |         |                         |     |           |         |
| Fishers probability                               | 81%   |           |         |                         |     |           |         |

The results show that there is at least a 10% change of the results being produced by chance alone in all cases. This is considerably greater for the final Q12 test (about 80%). The other test (Q8) had a 26% or 27% chance that the results were produced by chance alone. However, this result was the opposite of what was expected so what is being tested here is the probability that the treatment was having a negative influence on pro-environmental consumer choice.

The acceptable level of certainty in a finding for a result to be considered significant is typically 95%, or no more than a 5% chance that the null hypothesis is the case. This level of significance is sometime increased to 99% or 1% uncertainty. Therefore, none of the test can be confirmed. The null hypotheses needs to be retained in all cases and that: the results are generated by chance alone.

## 6.9. DISCUSSION OF FINDINGS

The following reasons might explain the failure to prove any of the hypotheses tested:

3. **The hypotheses are not valid.** This conclusion needs to be retained and should not be dismissed when reading the discussions points below.
4. **The sample sizes were insufficient.** This will always be the case as larger samples will always point towards greater levels of significance, at least where the results indicate in the right direction as in the case for Q's 6 & 12. To illustrate the point, analysis involving scaling-up the results to the point where the 95% significance threshold is breached suggests that a 40% greater sample who responded in these proportions would have found a statically significant result for Q6. For the Q12 test to be significant, equivalent analysis suggests that a 50 times greater sample would have been required. However, these findings are not based on real data and so should not affect the conclusion.
5. **The artificial nature of the trial led to poor consideration by the respondents.** This represents the main weakness when using a laboratory based trial. The respondents may not fully behave as they would have done in a real purchasing context. The lack of real incentive may have also led some respondents to give only slight or no consideration to the responses given so that they can be entered into the prize draw. The results would not generally support this as there was not an incentive for the test which has the strongest result, Q6. Furthermore, the cross-referencing of the results from the contextual questions did not find widespread to significant contradictory responses.

## 7. CONCLUSIONS

This study has presented the key drivers of consumer behaviour, with a particular focus on what behavioural economics brings to our understanding of how consumers make decisions and what influences their decision-making. The analysis into consumer choice has also identified a number of uncertainties about consumer behaviour that merit further research, in order to gain deeper insights into decision-making. These research priorities include:

- Consumer segmentation models across the EU: understanding the different groups of consumers, future trends in the evolution of the EU population and demographics, and how they would react to specific instruments is key. However, it is currently uncertain whether such models can be applied at the EU level.
- The effects of displaying price: consumer policy instruments often involve the use of financial instruments such as taxes and subsidies. The way in which a price change due to government intervention is displayed to consumers is important and can determine the effectiveness of the policy.
- Consumer behaviour in relation to specific products: depending on the type of product in question (e.g. vehicles, energy using products, food, cosmetics, clothing, etc.), hence different types of policies may be more effective.

In terms of designing and carrying out consumer behaviour experiments, the study found that careful planning is needed in order to get data needed for meaningful results – it is difficult to return to a research trial it has been completed. The results of the consumer trial carried out within the context of this study also reveals that tests and experiments are not always definitive – especially in laboratory settings where consumers are tested *outside* a real world setting and using larger test samples can help to obtain more robust conclusions. Finally, the study also identified key barriers to more effective and widespread research into consumer choice in EU MS. The barriers include:

1. Incorporating consumer behaviour into decision-making is not common practice for policy-makers, who do not always make the link between priority environmental issues and consumer behaviour.
2. Interdisciplinary research programmes are not common practice among universities and institutions, as research tends to focus on one specific area (such as transport or energy).
3. Retailer-academic collaboration is rare, and there may be barriers to overcome in terms of sharing of commercially sensitive findings.

Overcoming the above barriers will be critical in achieving more effective and widespread research in consumer behaviour. One way to overcome such barriers is to set up funding requirements that promote more interdisciplinary research and include actors in the commercial and marketing fields.

## 8. ANNEX 1 – DETAILED DEVELOPMENT OF TRIAL METHODOLOGY

### 8.1. CONTENT OF TRIAL WEBSITE

#### PARTICIPATION INFORMATION SHEET

*Consent form to be completed online by research trial participants; information available as a pdf for participants to download and print to take away.*

#### **Expanding the evidence base for the design of policy influencing consumer choice for products and services with environmental impacts**

You are being invited to take part in a research study being conducted by the Policy Studies Institute, which is part of the University of Westminster's School of Social Sciences, Humanities and Languages (SSHL). The aim of the research is explore the way in which people make decisions when buying products.

The study will involve you completing a short online survey. This will ask you some questions about yourself and then ask you to imagine you are shopping for some products online. Note that the images that you will be presented with are images only and are not linked to an online store.

The survey will take around 15 minutes to complete.

As a thank you for taking the time to participate in the survey, you will also be asked if you would like to be entered into a prize draw for a camera. If you do, you will need to provide your name and email address. This information will be kept separately from your responses to the rest of the questionnaire. You will only be entered into the prize draw if you answer all of the questions in the survey.

- Participation in the survey is entirely voluntary.
- You have the right to withdraw from the research, by not completing the survey, at any time without giving a reason.
- You have the right to ask for your data to be withdrawn as long as this is practical, and for personal information to be destroyed.
- Your responses will be confidential. No individuals will be identifiable from any collated data, written report of the research, or any publications arising from it.
- All data will be kept on a secure server by the organisation administering the research website.
- You do not have to answer particular questions on the survey if you do not wish to. However, you will only be entered into the prize draw if you complete the entire survey.

If you have any questions about the survey or the research project, please email [k.mcgeevor@psi.org.uk](mailto:k.mcgeevor@psi.org.uk) or call 020 7911 7545.

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## **CONSENT FORM (to be completed online by participants)**

### **Expanding the evidence base for the design of policy influencing consumer choice for products and services with environmental impacts**

I have read the information above and I am willing to act as a participant in the above research study.

Name:

Date:

This consent information will be stored separately from any data you provide so that your responses remain anonymous.

---

## **Introduction**

Thank you for taking part in the research experiment. We are undertaking research to better understand how consumers make purchasing decisions. The results will be used by governments to better understand how consumers behave.

What follows are a number of questions which should take no more than about 3xx minutes to complete. At the end, you will be offered the choice of which camera you would like to receive if you win the prize draw.

To start, please press NEXT below.

**Cancel**

**Next**

## **About yourself**

We need some basic information about you before we start. The responses you provide here are confidential and will only be used to analyse the results.

1. What is your gender?



Male

Female

2. What is your age?

18 – 21

22 – 25

26 – 29

Over 30

3. What is your living situation whilst you are studying at the University of Westminster?

Living in halls of residents

Living with parents or guardian

Living alone in private accommodation

Living in shared private accommodation

Other

4. Are you a resident of the UK?

Yes

No

**Cancel**

**Back**

**Next**

### Which product would you buy?

5. We would like you to imagine that you shopping online for a laundry cleaning product.

You are presented with the following two products. Both provide enough washing powder to do 10 washes. However, the one on the bottom is manufactured in a way which is more environmentally-friendly.

Which of the two washing powers would you buy?

Product A

## Persil Laundry Powder Bio



£3.01

Qty.

1

Add

[Show similar](#) | [Add to list](#) | [Add to favourites](#)

Product  
B

## Ecover Concentrated Bio Powder



£3.57

Qty.

1

Add


[Show similar](#) | [Add to list](#) | [Add to favo](#)

Two buttons to choose from: Product A and Product B

6. Now imagine you are shopping for some toilet cleaner. You are presented with the following two products. Which of the two cleaners would you buy?

## Harpic Power Plus Liquid Citrus Toilet Cleaner 750ml



 Click images to enlarge

£1.74

Qty.


1

Add

[Show similar](#) | [Add to list](#) | [Add to favourites](#)

## Ecover Ocean Waves Toilet Cleaner 750ml



 Click images to enlarge

£1.75

Qty.

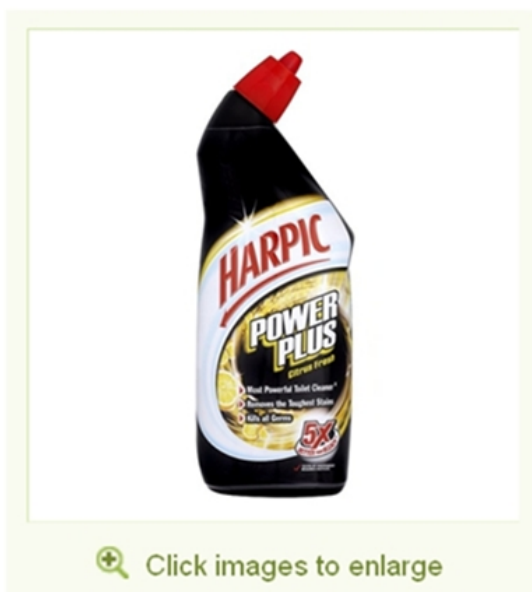
1

Add

[Show similar](#) | [Add to list](#) | [Add to favourites](#)

Treatment:

## Harpic Power Plus Liquid Citrus Toilet Cleaner 750ml



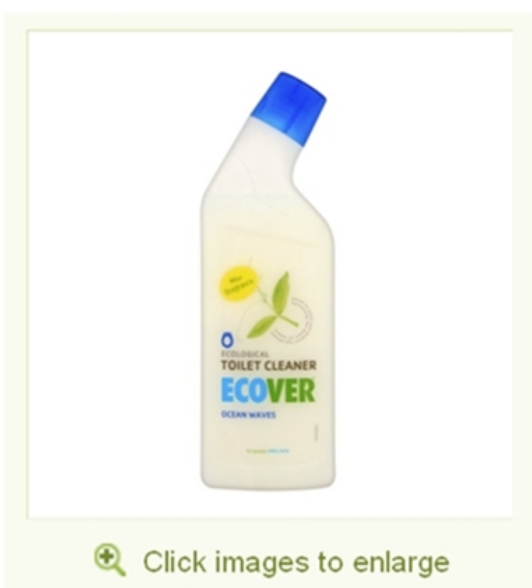
Customer Rating: ★★★★★

£1.74

Qty.  [Add](#)

[Show similar](#) | [Add to list](#) | [Add to favourite](#)

## Ecover Ocean Waves Toilet Cleaner 750ml



Customer Rating: ★★★★★

£1.75

Qty.  [Add](#)

[Show similar](#) | [Add to list](#) | [Add to favourite](#)

7. Now imagine that you are shopping online for a new kettle. You are presented with the following two products. Which of the two kettles would you buy?



**Russell Hobbs 17869 Black Plastic Buxton 1.6 Litre Kettle with concealed 3KW Element**  
by [Russell Hobbs](#)

Price: **£19.99**

**In stock.**



**Philips HD4669 3000W Kettle with 1.7L Capacity in Black Brushed Metal**  
by [Philips](#)

Price: **£19.99**

**In stock.**

8. Now imagine that you are presented with the following two kettles. They are similar in price but one is more energy efficient than the other. Which of the two kettles would you buy?

Control:



**Russell Hobbs 13355 1.7 L Ceylon Stainless Steel Kettle Classic Style**  
by [Russell Hobbs](#)

★★★★★

Price: **£19.99** & this item **Delivered FREE in the UK** with Super Saver Delivery. [See details and conditions](#)

**In stock.**



Philips HD4671/20 Energy Efficient Kettle Brushed Metal 3.0KW 1.7L

by [Philips](#)

★★★★★

Price: **£23.49** & this item **Delivered FREE in the UK** with Super Saver Delivery. [See details and conditions](#)

In stock.

Treatment:



Russell Hobbs 13355 1.7 L Ceylon Stainless Steel Kettle Classic Style

by [Russell Hobbs](#)

★★★★★

RRP: **£24.99**

Price: **£19.99** & this item **Delivered FREE in the UK** with Super Saver Delivery. [See details and conditions](#)

You Save: **£5.00 (20%)**

In stock.



Philips HD4671/20 Energy Efficient Kettle Brushed Metal 3.0KW 1.7L

by [Philips](#)

★★★★★

RRP: **£40.85**

Price: **£23.49** & this item **Delivered FREE in the UK** with Super Saver Delivery. [See details and conditions](#)

You Save: **£17.36 (42%)**

In stock.

## You and the environment

9. Which of these best describes how you feel about your current lifestyle and the environment?

I'm happy with what I do at the moment

I'd like to do a bit more to help the environment

I'd like to do a lot more to help to environment

Don't know

10. And which of these would you say best describes your current lifestyle?

- I don't really do anything that is environmentally-friendly
- I do one or two things that are environmentally-friendly
- I do quite a few things that are environmentally-friendly
- I'm environmentally-friendly in most things I do
- I'm environmentally-friendly in everything I do
- Don't know

11. Below is a list of things that people might do to help the environment. For each one, indicate which of the responses listed applies to you personally at the moment.

|   | I don't really want to do this | I haven't really thought about doing this | I've thought about doing this, but probably won't do it | I'm thinking about doing this | I'm already doing this, but I probably won't manage to keep it up | I'm already doing this and intend to keep it up | I've tried doing this, but I've given up | Don't know | Not applicable |
|---|--------------------------------|---|---|-------------------------------|---|---|--|------------|----------------|
| Recycle more rather than throwing things away |                                |   |   |                               |   |   |  |            |                |



|   |  |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|--|
| Eat food that is produced locally, when it is in season |  |  |  |  |  |  |  |  |  |
| Buy fish from certified sustainable sources             |  |  |  |  |  |  |  |  |  |
| Compost your household's food and garden waste          |  |  |  |  |  |  |  |  |  |
| Reuse and repair instead of buying new items            |  |  |  |  |  |  |  |  |  |
| Using public transport instead of taking the car        |  |  |  |  |  |  |  |  |  |

**Cancel**

**Next**

**Thank you for taking part.**

Thank you for taking part in the research.

If you would like to now be entered into the prize draw, please complete you details below and indicate which camera you would like to receive.

12. Which camera you would like to receive if you win?

Control:

Worth £123



#### Technical specifications

This camera has a 26 mm wide-angle lens which offers a greater field of view, which is ideal for group shots and when you don't have space to step back.

Worth £123



#### Technical specifications

This camera offers "Shake Reduction", even when using the optical and mechanical zoom. This provides blur-free images.

Treatment:

Worth £123



Was £172

#### Technical specifications

This camera has a 26 mm wide-angle lens which offers a greater field of view, which is ideal for group shots and when you don't have space to step back.

Worth £123



#### Technical specifications

This camera offers "Shake Reduction", even when using the optical and mechanical zoom. This provides blur-free images.

## Post-experiment page

*Subjects to be redirected to the newsletter page from which the notice was posted*

### 8.2. TECHNICAL CHALLENGES

There are a number of technical specifications which require exploring, in addition to the content.

- **Assignment** – There are two points where those entering the experiment need to be randomly assigned in to either the treatment group or the control group. These are at questions 6, 8 and 12. The two hypotheses are being tested independently from one another. Although not a significant potential bias, the rationale for not assigning all subjects into a treatment or control group from the outset is that being assigned to the treatment group for one question might possibly make the subject more aware of what is being tested. Randomly assigning within the experiment would overcome some of this. However, it is judged that the ideal would be to assign all subjects into two groups, one to be offered the treatment question for questions 6 & 8 and control for question 12, the other to be offered the control question for questions 6 & 8 and treatment question for 12.
- **The cancel button** – The purpose of the cancel button function is to provide a way for subjects to exit early in a way that it can be registered. It also attempts to reduce the number exiting by reminding subjects that they will not be entered in to win a camera. The following dialogue box is proposed: *‘Are you sure that you want to exit the experiment? If you press YES your input will be cancelled and you will not be able to win the camera.’* The options provided within the dialogue box are either ‘YES’ or ‘NO’. If the subject does press yes, their involvement should not be included in the tally of those entered into the prize draw.
- **Selection of products** – For the test questions, 6, 8 & 12, the subject is invited to select a product by pressing the picture which is hyperlinked to the next page.
- **Other responses** – Other than the selection of a product, all other questions are responded to by selecting a worded response (i.e. yes, no etc.), or in the case of question 11, a series of selection boxes of some kind where one of the x axes responses are required for each y axes questions. It is required that subjects can highlight only one response for each question in a way that they can see all of their responses, and then press next or cancel. Where the subject has failed to respond to all questions, the page needs to remain and the following dialogue needs to appear *‘You have not answered one or more of the questions on this page. If you do not answer all of the questions, you will not be eligible to enter the prize draw. Please review your responses selecting a*

response for all questions before pressing next.’ Ideally, the question with the missing response would be highlighted in red.

- **Recording of results** – The results need to be recorded for all those who respond to any questions. A record of whether they were presented with the treatment or control question is also required. Tabular or table coding will be most suitable for this.

### 8.3. RATIONALE FOR CONTENT

The purpose of this section is to provide commentary and rationale for why the experiment has been developed in the way that it has. This is done through web pages:

**Questions 1 – 4: About yourself** – These questions (gender, living situation and whether the subject is normally resident in the UK) are intended to record information about the respondents which will likely be useful in analysing the results. It is believed that these are the factors which are most important in explaining the level of experience and understanding that the respondents have in the consumer choice posed. It is possible, for example, that the results show significance when only UK resident students are analysed. This data is also important when reporting and extrapolating the findings.

- **Question 5. Which product would you buy?**

This is a dummy question to get students used to the format of the questions and to help them imagine they are making choices online. The two products are both comparable laundry powders. The results from this question will not be used to explore a particular hypothesis.

- **Question 6. Which product would you buy?** This question is intended to explore the hypothesis: *Providing consumers with positive recommendations from other consumers for environmentally-preferable goods will positively affect consumer purchasing.* The following factors and issues were considered:

- The choice of product – toilet cleaners – needed to be familiar and relevant but not necessarily products that students will attach a strong brand value to (e.g. like clothes). Being confronted with the option to buy this particular environmentally friendly toilet cleaner will also be sufficiently familiar to most students that their recognition of the brand will lead to sufficient levels of trust in the product’s credentials, even for those who do not buy such products. The downside of this is that habit may lead to pre-determined decisions without considering the treatment statement.
- The treatment in this instance will be the provision of a star rating for each product, with a higher product rating for the more environmentally-friendly product. The product ratings are actual ratings taken from the website on which the products were sold, which

reduces the ethical risks posed if we were to provide false consumer recommendations.

- Method – What is being measured within the control group will be their willingness to pay more for an environmentally less harmful product. Asking this question in such a hypothetical context is understood to be open to considerable bias as the subjects are not actually paying the extra money. However, what is actually being tested is the influence of the treatment rating informing subjects of other consumers' recommendations, compared to the control group. The hypothetical nature is therefore less important in terms of bias.
- Control – Attempts were also made to ensure that the non-environmental product chosen represented the kind of product likely to be a substitute if environmental impact is not valued sufficiently (i.e. a high quality, biological product).

**Question 7. Which product would you buy?** This is a dummy question. The two products are both comparable electrical products. The results from this question will not be used to explore a particular hypothesis.

**Question 8. Which product would you buy?** This question is intended to explore the impact of other consumers on the test the hypothesis: *A product with a sale price much lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.* The following factors and issues were considered:

- The choice of product – kettles – needed to be familiar and relevant but not necessarily products that students will attach a strong brand value to (e.g. like clothes).
- The treatment in this instance will be the provision of a recommended retail price indicated a saving, with a more substantial saving showing for the more energy efficient kettle. The RRP's are actual prices quoted on the website which the products we sold, which reduces the ethical risks posed if we were to provide false information.
- Method – What is being measured within the control group will be their willingness to pay more for a more energy efficient kettle. Asking this question in such a hypothetical context is understood to be open to considerable bias as the subjects are not actually paying the extra money. However, what is actually being tested is the influence of the treatment rating informing subjects of the products' RRP's. The hypothetical nature is therefore less important in terms of bias.
- Control – Attempts were also made to ensure that the non-environmental product chosen represented the kind of product likely to be a substitute if environmental impact is not valued sufficiently.

- **You and the environment** – This page is intended to gain an understanding of the subjects attitudes and behaviours associated with the environment. This should provide a useful cross-check against any habitual selection bias in the choice of products. The questions are taken from Defra’s Environmental Tracker Survey, which is used to measure environmental attitudes and behaviours across the UK. This will allow analysis to compare the attitudes of the student respondents with those of the UK population more widely.
- **Which camera would you prefer to own?** – This question is intended to test the hypothesis: *‘A product with a sale price much lower than a stated Recommended Retail Price (RRP) will be more attractive to consumers than a product of the same sale price with no stated RRP.’* It was decided that the offer needed to be based on actual products offered on the market (at Amazon.co.uk). This means that, in theory, they are both worth the same<sup>128</sup> within the market context but one of them highlights a reduction in price for the treatment group. The reduction in price is used instead of RRP in this instance as this is how it was presented on Amazon’s website.
  - Control – Attempts were made to ensure that the two cameras on offer are as similar as possible, except for the reduction in price highlighted to the treatment group. The cameras were chosen as they were offered at a very similar price; they are of similar design and colour and brand value. The only major difference which could not be controlled for was the different functions: one offers a wide angle lens, and the other offers shake reduction. These might be said to offer broadly equivalent level of service depending of the individual requirements and has been highlighted to distract attention away from what is actually being tested. As this difference is held constant between the control and the treatment group, this difference does not represent a notable source of bias. Other than this, detailed specifications have not been provided in order to maintain control.

## 8.4. SELECTING A PRIZE WINNER

The following steps were undertaken for a prize winner to be selected.

1. Removal of all duplicate entries, leaving every respondent represented in the list once.

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<sup>128</sup> Note, there was a slight difference in prices of less than £1 but this was rounded up in order to control for this.

2. Used Excel's random number generator function to generate a random number between 1 and 419 (Formula: =randbetween(1,419))
3. Generated a number which corresponded to a particular student (not provided for congeniality reasons).
4. Participant informed and sent the Pentax camera which he selected when completing the survey.
5. Winner emailed and notified that he would receive an email when the camera had arrived.

## 8.5. THE PRODUCTS PRESENTED WITHIN THE TRIAL

The details of the products being used within the trial are provided below.

The cleaning and laundry products were taken from the Ocado website on the 20<sup>th</sup> January 2011:

- Persil Laundry Powder:  
[http://www.ocado.com/webshop/product/Persil-Laundry-Powder-Bio/47944011?from=search&tags=|20000&param=persil&parentContainer=SEARCHpersil\\_SHELFVIEW](http://www.ocado.com/webshop/product/Persil-Laundry-Powder-Bio/47944011?from=search&tags=|20000&param=persil&parentContainer=SEARCHpersil_SHELFVIEW)
- Ecover Concentrated Bio Powder:  
[http://www.ocado.com/webshop/product/Ecover-Concentrated-Non-Bio-Laundry-Powder-10-Washes/58655011?from=search&tags=|20000&param=ecover+laundry&parentContainer=SEARCHecover+laundry\\_SHELFVIEW](http://www.ocado.com/webshop/product/Ecover-Concentrated-Non-Bio-Laundry-Powder-10-Washes/58655011?from=search&tags=|20000&param=ecover+laundry&parentContainer=SEARCHecover+laundry_SHELFVIEW)
- Harpic Power Plus Toilet Cleaner:  
[http://www.ocado.com/webshop/product/Harpic-Power-Plus-Liquid-Citrus-Toilet-Cleaner/41235011?from=search&tags=|20000&param=harpic&parentContainer=SEARCHharpic\\_SHELFVIEW](http://www.ocado.com/webshop/product/Harpic-Power-Plus-Liquid-Citrus-Toilet-Cleaner/41235011?from=search&tags=|20000&param=harpic&parentContainer=SEARCHharpic_SHELFVIEW)
- Ecover Toilet Cleaner:
  - [http://www.ocado.com/webshop/product/Ecover-Ocean-Waves-Toilet-Cleaner/38718011?from=search&tags=|20000&param=ecover+toilet&parentContainer=SEARCHecover+toilet\\_SHELFVIEW](http://www.ocado.com/webshop/product/Ecover-Ocean-Waves-Toilet-Cleaner/38718011?from=search&tags=|20000&param=ecover+toilet&parentContainer=SEARCHecover+toilet_SHELFVIEW)

The kettles were taken from the Amazon website on the 20<sup>th</sup> January 2011:

- Russell Hobbs Black Kettle:
  - [http://www.amazon.co.uk/gp/product/B002FB5J0S/ref=s9\\_simh\\_gw\\_p79\\_d0\\_i1?pf\\_rd\\_m=A3P5ROKL5A1OLE&pf\\_rd\\_s=center-](http://www.amazon.co.uk/gp/product/B002FB5J0S/ref=s9_simh_gw_p79_d0_i1?pf_rd_m=A3P5ROKL5A1OLE&pf_rd_s=center-)

[2&pf\\_rd\\_r=17WPT17PGMGD3PATAJTN&pf\\_rd\\_t=101&pf\\_rd\\_p=467128533&pf\\_rd\\_i=468294](http://www.amazon.co.uk/Philips-HD4669-Kettle-Capacity-Brushed/dp/B00491BX5M/ref=sr_1_cc_1?ie=UTF8&qid=1295612439&sr=1-1-catcorr)

- Philips Kettle in Black Brushed Metal:
  - [http://www.amazon.co.uk/Philips-HD4669-Kettle-Capacity-Brushed/dp/B00491BX5M/ref=sr\\_1\\_cc\\_1?ie=UTF8&qid=1295612439&sr=1-1-catcorr](http://www.amazon.co.uk/Philips-HD4669-Kettle-Capacity-Brushed/dp/B00491BX5M/ref=sr_1_cc_1?ie=UTF8&qid=1295612439&sr=1-1-catcorr)
- Russell Hobbs Stainless Steel Kettle:
  - [http://www.amazon.co.uk/Russell-Hobbs-13355-Stainless-Classic/dp/B000IHYSB2/ref=sr\\_1\\_2?s=kitchen&ie=UTF8&qid=1295612375&sr=1-2](http://www.amazon.co.uk/Russell-Hobbs-13355-Stainless-Classic/dp/B000IHYSB2/ref=sr_1_2?s=kitchen&ie=UTF8&qid=1295612375&sr=1-2)
- Philips Energy Efficient Kettle:
- [http://www.amazon.co.uk/Philips-HD4671-Energy-Efficient-Brushed/dp/B001EHF3P0/ref=sr\\_1\\_1?s=kitchen&ie=UTF8&qid=1295612323&sr=1-1](http://www.amazon.co.uk/Philips-HD4671-Energy-Efficient-Brushed/dp/B001EHF3P0/ref=sr_1_1?s=kitchen&ie=UTF8&qid=1295612323&sr=1-1)

The cameras were taken from the UK Amazon website on the 6<sup>th</sup> of January 2011:

- Pentax Optio A30 Digital Compact Camera [10MP, 3x optical] - £122.95  
[http://www.amazon.co.uk/Pentax-Digital-Compact-Camera-optical/dp/B000NI6J7W/ref=sr\\_1\\_299?s=electronics&ie=UTF8&qid=1294319263&sr=1-299](http://www.amazon.co.uk/Pentax-Digital-Compact-Camera-optical/dp/B000NI6J7W/ref=sr_1_299?s=electronics&ie=UTF8&qid=1294319263&sr=1-299)
- SONY Cyber-shot DSC-W320 – black - £122.49:  
[http://www.amazon.co.uk/Sony-Sony-Cyber-shot-DSC-W320-black/dp/B003DQKKCQ/ref=sr\\_1\\_296?s=electronics&ie=UTF8&qid=1294319263&sr=1-296](http://www.amazon.co.uk/Sony-Sony-Cyber-shot-DSC-W320-black/dp/B003DQKKCQ/ref=sr_1_296?s=electronics&ie=UTF8&qid=1294319263&sr=1-296)